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13. ABSTRACT (Maximum 200 words) Pregnant and postpartum soldiers have unique needs that require adjustments in the demands placed on them in a military environment. This prospective cohort study was undertaken to examine the effects of pregnancy on the health, fitness and nutritional status of postpartum soldiers. We studied 468 females in three different groups: a nonpregnant active duty group (NPAD, n=215), a postpartum family member group (PPFM, n=126), and a postpartum active duty group (PPAD, n=127). Subjects underwent blood draws to assess iron, folate and calcium status; anthropometric measurements to determine body composition; and dual energy x-ray absorptiometry to measure bone mineral density. Questionnaires were administered to capture demographic data, health habits and nutritional intake. In addition, we assessed soldier fitness using scores from their semi-annual Army Physical Fitness Test immediately prior to study entry and 6-9 months later. We reviewed medical records of active duty subjects between 1 January 1992 and study termination to calculate injury and illness rates at baseline (preconception), and during the various phases of postpartum recovery. Comparisons were made between the two active duty groups and the two pregnant groups.

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INTRODUCTION

The percentage of females in the military services has steadily increased since the enactment of Public Law 90-130 in 1967. Currently, women comprise 13.7% of all active duty military personnel (197,529 women) and 14.5% of all Army personnel (70,087 women) (1). Among these women, it has been estimated that approximately 10% of military females and 9% of Army females are pregnant at any one time (2). This large cohort of pregnant and postpartum service members has unique needs that may require adjustments in the demands placed on it in a military environment.

Fitness

Some allowances, particularly as they relate to fitness training, have been made for service members during the postpartum period. In the Army, prior to 1996, postpartum soldiers received 42 days of convalescent leave (CVL) and then return to their military job without limitations. They performed physical training (PT), not at the same pace and distances of the soldiers in their unit, but at their own pace and distance (Army Regulations (AR) 40-501, Field Manual 21-20; 40-501) for the next 90 days. One hundred thirty-five days following delivery, the postpartum soldier was expected to meet the weight/body fat standards outlined in AR 600-9, as well as pass the Army Physical Fitness Test (APFT) required of all soldiers. Starting in 1996, these requirements to return to unit PT and to meet the APFT/body fat standards were extended to six months. The expectations for work performance, fitness and body weight/fat standards have never been scientifically examined to determine if they are achievable for the postpartum population. Thus far, no one has determined when postpartum women, either military or civilian, return to their pre-pregnancy work capacity or fitness level.

Differences in aerobic capacity between the pregnant and postpartum state have been examined(3-5). Generally, women demonstrate little or no difference in oxygen uptake or aerobic capacity during submaximal exercise when comparing their pregnant and postpartum states(4, 5). As a result of these findings, many have concluded that pregnancy has no adverse effect on fitness in the postpartum

period(3-5). The problem with these studies is that postpartum measures were used as the baseline with the assumption that postpartum fitness matches that of the pre-pregnant state. However, when body composition, energy expenditure and maximal oxygen uptake are measured prior to conception and 8 weeks postpartum, a detraining is noted that is reflected by increased body weight, decreased energy expenditure and lower oxygen uptake compared to the pre-pregnant state(6). In addition, cardiovascular changes in response to pregnancy, such as increased end-diastolic volume, stroke volume and cardiac output, and decreased systemic vascular resistance, carry over into the postpartum period(7).

Injury

The effect of reduced fitness on postpartum soldiers at the time they are required to return to duty is unknown. Training-related injuries, a leading cause of morbidity in the US Army(8-10), are consistently higher in both male and female soldiers who have low levels of physical fitness(8, 10-16). These injuries result in medical clinic visits and time lost from military duties (Table 1). These elevated injury rates may rise further during the puerperium as a result of the negative effect of pregnancy upon fitness.

Body Composition

Until recently, the usual recommendation for pregnancy weight gain in healthy women has been 24 to 28 lbs (11 to 13 kg), with no consideration given to pre-pregnant weight(17). However, the Institute of Medicine (IOM) has now issued guidelines for weight gain based upon pre-pregnancy weight for height (Table 2). Delivery results in an average weight loss of 12 lbs (5.5 kg). Most women lose weight steadily following delivery over the first 3 to 6 months, with the greatest loss in the first 3 months.

Once lactation is begun, moderate dieting to achieve a weight loss of 4.5 lbs/mo (2 kg/mo) has been found to be safe for women who are overweight prior to conception. However, women who are already lean may be at risk for impaired lactation performance if energy intake is <7.53 MJ/d (1800 kcal/d). The Army expects their postpartum soldiers to meet the weight/body fat standards after 135

Table 1. Summary Of Military Studies Reporting Low Levels Of Fitness As A Risk Factor For Injury.

AUTHOR	*RR*	GUNDUR	POPULATION
Westphal (1995)(18)	1.55	females	Army Combat Basic Trainees (Ft. Jackson, 1993)
Knapik (1993)(13)	1.60	males	Army infantry soldiers (Ft. Richardson)
Jones (1993)(11)	1.69 2.80	males females	Army Combat Basic Trainees (Ft. Jackson, 1984)
Jones (1993)(10)	1.68	males	Army Combat Basic Trainees (Ft. Benning, 1987)
Kimsey (1993) (12)	$2.11 \\ 2.44$	males females	Marine Basic Trainees (Parris Island)
Bell (1993)(16)	1.95 1.46	males females	Army Combat Basic Trainees (Jackson, 1988)

^{*}Risk Ratio (RR) is the ratio of the cumulative incidence (%) of injury in the low fitness population (slow run times) compared with the high fitness population (fast run times).

Table 2. Recommended Total Weight Gain Ranges For Pregnant Women By Prepregnant Body Mass Index (BMI)(kg/m²)(17).

WEIGHT-FOR-HEIGHT CATEGORY	RECOMMENDED TOTAL WEIGHT GAIN	
	kg	b
Low (BMI<19.8)	12.5 - 18	28 - 40
Normal (BMI=19.8 - 26.0)	11.5 - 16.0	25 - 35
High (BMI>26.0	7.0 - 11.5	15 - 25

days following delivery. That can be a challenge for most lean and some normal weight-for-height females. Much of the literature addressing postpartum weight loss is outdated and limited. Four recent investigations (2 comparing weight loss in the puerperium with first trimester weight(4, 19) and two comparing weight

loss in puerperium with pre-pregnant weight(6, 20) reported a mean net weight gain at 4 weeks(4), at 4-8 weeks(19), at 12-20 weeks(20) and at 6 months(19) postpartum in a variety of populations. The rate of weight loss in postpartum soldiers has not been documented.

Calcium and Bone Mineral Status

Bone status may be negatively affected during pregnancy as a result of changes in calcium homeostasis, reduction in physical activity and lactation. This alteration in bone status may lead to increased incidence of bone-related training injuries such as stress fractures(21). In the third trimester, the maternal system provides approximately 200 mg of calcium per day for fetal development(22). Often, calcium is mobilized from bone to meet this large requirement (22-24). Decreased bone mineral densities due to bone demineralization to meet pregnancy requirements have been noted in susceptible skeletal regions (e.g. lumbar spine, femoral neck) following pregnancy(22).

Reduced physical activity is another factor relevant to bone status in pregnant soldiers. As pregnancy progresses, physical activity and exercise become increasingly difficult. Women who become more sedentary, relative to their pre-pregnant activity state, may reduce the stress placed on their bones and thereby diminish bone strength(25).

Finally, lactation is another factor which may affect bone mineral density. The calcium drain for milk synthesis is large, similar to that for fetal growth during late gestation(24, 26). In addition to the high calcium requirements for milk synthesis, endocrine factors may also negatively affect bone calcium. Lactational amenorrhea may last from three months to over three years, depending on the duration of lactation and pattern of breast feeding(27). During this period, ovarian estrogen production is very low and a state of hypoestrogenemia exists. Hypoestrogenism is a major contributor to bone demineralization(25). Additionally, plasma prolactin concentrations are elevated during lactation(27), a condition that also is associated with bone mineral loss(24).

Nutrition

Recognition of the physiologic demands associated with pregnancy and lactation have resulted in suggested changes in the RDA for certain nutrients and micro nutrients. Table 3 summarizes some of these requirements. There are no values reported for postpartum, non-lactating women as their nutrient requirements are assumed to quickly return to their pre-pregnancy standard.

Table 3. Recommended Dietary Allowances For Pre-pregnant, Pregnant And Lactating Women 15-25 Years Old(28, 29).

	Pre-pregnant	Pregnant	Lactating (1-6 mos)
Energy (kcal)	2,220	2,500	2,700
Protein (ĝ)	44-50	60	65
Zinc (mg)	12	15	19
Magnesium (mg)	310-320	350-360	310-320
Calcium (mg)	1000	1000	1000
Selenium (ug)	55	65	75
Vitamin A (ug RE)	800	800	1300
Vitamin C (mg)	60	70	95
Vitamin E (mg)	8	10	12
Niacin (mg)	15	17	20
Iron (mg)	15	30	15
Folate (ug)	180	400	280

Evidence indicates that significant numbers of military women fail to ingest the Recommended Daily Allowances of various nutrients, especially while in a field setting(30). There has been no such documentation, however, for pregnant or postpartum soldiers.

Iron Status

Iron deficiency has been recognized as a major nutritional problem in both developing and institutionalized countries, women being at greater risk for this deficiency than men. Explanations for this difference between the genders are related to the losses of iron experienced by women through monthly menstrual blood loss, as well as a tendency for women to exhibit inadequate dietary iron

intake. It has been reported that the average American diet provides approximately 6-7 mg of iron/1000 kcal(31). This would require a woman to ingest approximately 3000 kcal to acquire the Military Recommended Dietary Allowance (MRDA) of 18 mg of iron. This recommended allowance is increased in the pregnant woman because of fetal and placental requirements, as well as maternal erythropoietic needs and the blood loss associated with delivery. It is estimated that the pregnant woman requires approximately an additional 6 mg of iron/day during the last two trimesters, a need which cannot be reasonably met by diet alone(32). This is the basis for the medical practice of routinely providing iron supplementation during the prenatal and early postpartum period, which generally occurs even in the absence of laboratory evidence of an iron deficiency.

Data from the National Health and Nutrition Examination Survey(33) suggest that about 5 to 10% of women aged 20 to 44 years are iron deficient. The incidence of iron deficiency among the pregnant population is felt to be higher because of increased physiologic demands. Data from the Pregnancy Nutrition Surveillance System indicate that a low hemoglobin level and/or low hematocrit is present in 4% of white women and 13% of black women during the first trimester and in 19% of white women and 38% of black women during the third trimester(34). Others have estimated that a hemoglobin level of less than 110 g/L and a hematocrit of less than 0.32 occurs in one-third to one-half of pregnant women who do not use iron supplements(35). However, the use of supplementation is no guarantee of iron balance if the supplementation is inadequate. Thomsen(36) demonstrated a significant decline in serum ferritin in a group of 21 pregnant women who were receiving daily 18 mg doses of iron supplementation. In fact, 15 of the 21 women in his study were judged to have empty iron stores at the 38th week of pregnancy.

Despite this obvious increased need for iron, considerable controversy exists within the medical community regarding the issue of routine iron supplementation for the pregnant woman. In fact, it has only been within the last couple of years that official policy statements suggesting levels of supplementation have been issued by such groups as the Institute of Medicine and United States Preventive Services Task Force. In 1990, the Food and Nutrition Board of the

Institute of Medicine recommended a supplementation of 30mg/day for the pregnant woman after week twelve of gestation(17). They further recommended additional supplementation of 60 to 120 mg of iron for those women who might be identified as anemic and iron deficient. A comparable recommendation was later issued by the Federation of American Societies for Experimental Biology(37) and the American College of Obstetricians and Gynecologists(38). Then, most recently the United States Preventive Services Task Force presented a policy statement which was based upon a review of the clinical research on the topic(39). They reported that "the evidence is insufficient to recommend for or against routine supplementation during pregnancy."

Reasons for this disagreement within the medical and scientific communities regarding the issue of iron supplementation are related to the lack of well-designed studies. Most information that is provided to support, or refute, the practice of iron supplementation is based solely upon observational investigations that did not control for any other factors that might have affected upon the measured variable(s). Nonetheless, the consistency of results between studies and study designs is considerable, with the majority of results suggesting strong associations between iron balance and various maternal and fetal outcomes.

Though much attention and research has been directed in recent years to answering questions regarding iron status and health of the pregnant woman, very little work has been done to examine the same issues during the postpartum period.

PURPOSE

The purpose of this study includes the following:

- 1. To determine the proportion of soldiers who return to their preconception fitness level at their first postpartum APFT.
- 2. To compare the distribution, incidence and risk of injury and illness between postpartum soldiers and non-pregnant, non-postpartum soldiers.
- 3. To compare changes in weight and body composition between postpartum soldiers and postpartum family members of soldiers in the postpartum period.
- 4. To compare nutritional status between late pregnant and postpartum soldiers and postpartum family members of soldiers.
- 5. To compare iron and folate status among late pregnant and postpartum soldiers, late pregnant and postpartum family members, and non-pregnant, non-postpartum soldiers.
- 6. To compare bone mineral status between late pregnant and postpartum soldiers and family members.

BODY

Subjects and General Study Plan

Active duty (AD) and family member (FM) females stationed at Ft. Lewis, Washington, who received their medical care at Madigan Army Medical Center (MAMC) participated in this prospective cohort study. Three study groups were formed based on the following criteria:

- a. Postpartum Active Duty Group (PPAD) AD females in their third trimester of pregnancy who were scheduled to remain on active duty at Ft. Lewis for at least 6 months postpartum.
- <u>b. Non-pregnant Active Duty Group (NPAD)</u> Non-pregnant female soldiers who did not have a confirmed pregnancy within 12 months of study inclusion, who were scheduled to remain at Ft. Lewis for at least 6 months after entering the study, and who had a negative pregnancy test at study onset.
- c. Postpartum Family Member Group (PPFM) Military spouses or daughters of military members who were in their third trimester of pregnancy and not scheduled to move from the area for 6 months after delivery.

Excluded from the study were any pregnant females (soldier or family member) sent to MAMC for definitive obstetrics care who resided outside the MAMC catchment area (50 mile radius); pregnant soldiers who planned on leaving the military immediately after delivery (Expiration Term of Service, ETS) or who had Permanent Change of Station (PCS) orders; any non-pregnant soldier who had a confirmed pregnancy within 12 months prior to study inclusion,

We identified women in their third trimester of pregnancy through the Obstetrics-Gynecology (OB-GYN) clinic at MAMC and asked them to volunteer for the study. Non-pregnant soldiers were solicited from the OB-GYN clinic and through their military unit chain of command. Those who met the inclusion criteria received written and verbal explanations as to the nature, duration, purposes, risks and benefits of the study. Five hundred and fourteen volunteers signed informed consent but only 468 submitted to initial data collection, Table 4.

Table 4. Number Of Subjects Who Submitted To Initial Data Collection.

Group*		Initial Data Collection	Initial DEXA** Exam	Initial Phlebotomy	Initial Questionnaire
PPFM	143	126	126	103	106
PPAD	145	127	127	96	99
NPAD	226	215	215	208	199
Total	514	468	468	407	404

^{*} PPFM = postpartum family member, PPAD = postpartum active duty soldier, NPAD = non-pregnant active duty soldier

Materials/Outcome Measures

Study subjects underwent phlebotomy to assess iron, folate and calcium status; anthropometric circumference measurements to determine body composition in accordance with Army Regulation (AR) 600-9; dual energy x-ray absorptiometry (DEXA) to measure bone mineral density and to validate body fat percentages obtained by circumference measurements; and low back and hamstring flexibility evaluations. In addition, we assessed soldier fitness using the last pre-pregnant APFT scores and the first postpartum APFT scores. Medical records of all soldiers were reviewed at the 6 month follow-up to record all injuries and illnesses. Demographics, health habits, diet history, and exercise habits before, during and following pregnancy were obtained through questionnaires. These data were collected at four phases according to the schedule in Table 5.

Background Information

Questionnaires obtained demographic data, a physical activity and exercise history, alcohol and caffeine consumption, prior reproductive health, menstrual history, and a food frequency history.

Fitness Assessment

The US Army administers a semi-annual APFT to soldiers to measure fitness. The APFT consists of three events: the maximum number of continuous pushups within 2 minutes, the maximum number of continuous sit-ups within 2 minutes, and a timed 2 mile run. The Army converts raw values into an

^{**} Dual Energy X-ray Absortiometry

Table 5. Collection Points For Various Outcome Measures.

	Pregnancy &	Postpartum Period		
Group.	Phase:1 Scill timester	Phase 2 D+1-3 days	Phase 3 D+7 weeks	Phase 4 D+6-9 months
PPFM	Phlebotomy Demographics EFFS**	DEXA Phlebotomy Anthropometry	Phlebotomy Anthropometry EFFS Flexibility	DEXA Phlebotomy Anthropometry EFFS Flexibility
PPAD	Phlebotomy Demographics EFFS	DEXA Phlebotomy Anthropometry	Phlebotomy Anthropometry EFFS Flexibility	DEXA Phlebotomy Anthropometry EFFS Flexibility Medical Records review APFT score
NPAD	Ν̈́Α	DEXA Phlebotomy Anthropometry Demographics EFFS	Phlebotomy Anthropometry EFFS Flexibility	DEXA Phlebotomy Anthropometry EFFS Flexibility Medical Records review APFT score

^{*}D=delivery

age-adjusted numeric score for each event. Sixty points for any event is the minimum score needed to pass that exercise. Failure of any event constitutes failure of the entire APFT. One hundred points is the maximum score that can be earned for a single exercise, 300 points maximum for the test. We obtained the APFT scores from the individual's APFT card (Department of the Army (DA) Form 705) which is maintained by the soldier's unit. The last APFT scores immediately prior to conception were used to assess baseline fitness. Postpartum fitness was based upon the scores from the soldier's first postpartum APFT usually conducted 6-9 months postpartum.

Injury/Illness

All AD soldiers maintain a medical record which documents each visit to a military health care provider. We screened the medical records of AD women in the study 6-12 months following delivery and documented all injuries/illnesses

^{**}EFFS=exercise and food frequency survey

recorded in the records since 1 January 1992. The period of military service which included Basic Training and Advanced Individual Training was not considered in our study. Therefore, we calculated injury and illness rates only for the time a soldier was assigned to a unit after initial military training. Data collected included date of visit, verbatim diagnosis, body part and side affected, disposition, and total limited duty days resulting from injury or illness. We also recorded causes for injuries, if stated in the medical records. An injury was defined as any neuromusculoskeletal complaint that resulted in a visit to a medical clinic and was recorded in the medical records. We defined illness as a visit to the medical facility for medical attention for any reason other than an injury. Visits for immunizations, birth control or routine OB/GYN exams were not included. In order to calculate the risk for injury and illness during the different stages of postpartum recovery, clinic visits and the number of days at risk (total number of days on active duty after initial military training but not before 1 Jan 1992) were recorded in the periods described in Figure 1. This analysis was not limited to the current pregnancy. Pregnancies occurring between 1 Jan 1992 and the study period were included for this analysis.

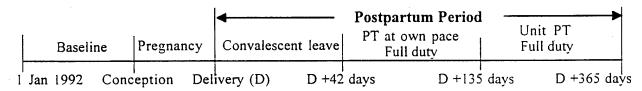


Figure 1. Time periods for different stages of postpartum recovery. These periods correspond to Army Regulation (AR 40-501) governing convalescent leave and activity level for postpartum soldiers prior to 1996.

Body Composition Assessment and Bone Mineral Density

Body composition was determined using three methods.

1. Dual-energy x-ray absorptiometry (DEXA) soft tissue and bone mass analyses. DEXA testing was performed on two occasions using Lunar's® DPXL bone densitometer. The pregnant soldier and pregnant family member received an exam 1-3 days and 6-9 months postpartum while the non-pregnant soldiers

received the DEXA at study entry and 6 months later. Each subject lay supine on a DEXA scanner table in shorts and T-shirt or hospital gown. Subjects were carefully positioned so that their body was centered on the table, their hands placed palms down, their head horizontally aligned, and their feet and knees supported and held together with Velcro straps so that the feet leaned away from the body at approximately 40 degrees. To obtain body fat and total fat-free mass, each soldier was scanned in 1 cm slices across the body, beginning from the head, at the 10 minute scanning speed(40). To obtain regional bone mineral density, overlapping slices across the right femoral neck and the lumbar vertebral body were done at the 4 minute and 5 minute scanning speeds, respectively(40). The data were analyzed using the Lunar software version 3.6 algorithms.

- 2. Body weight and height. Pregnant subjects were asked their typical prepregnant body weight through questionnaire. Actual body weights were taken at follow-up visits in shorts and T-shirt on one calibrated weight scale. A tape measure attached against the wall and used to assess standing height.
- 3. Anthropometric measurements. We measured four circumferences (forearm, wrist, neck and hips) with a flexible fiberglass tape measure. The average of two circumference measurements for each anatomical site was recorded, from which body fat was computed using standard Army equations in accordance with AR 600-9.

Nutritional Status

The food frequency data were collected using a modified version of the Health Habits and Diet History Questionnaire, produced by Gladys Block for the National Cancer Institute(41). This questionnaire contains an open-ended food frequency section of 60 food items which gives a semi-quantitative measurement of usual dietary intakes over a period of the previous month.

Iron, Folate and Calcium Status

Venous blood was obtained by venipuncture of a superficial vein in the antecubital region. Samples were prepared as described below. Urine was also collected. Analyses were done by Pennington Laboratories, Baton Rouge,

Louisiana and MAMC laboratory. Table 6 lists the assays performed on the collected blood and urine, and the site of analysis.

Blood was collected into vacuum tubes (3 tubes for each draw) by experienced phlebotomists at the hospital lab, using vacutainers. Two samples were collected into 10 ml SST sterile serum separation tubes. These samples were allowed to clot at 4 C for 12 to 24 hours. Sera was retained and stored at -20 C, protected from light, until assayed. One blood sample was collected into a 10 ml whole blood tube with EDTA. A 5 ml aliquot of this sample was processed for analysis of red cell folate and stored at -20 C, protected from light, until assayed. A portion of the blood was analyzed in the local hematology laboratory for hematocrit, hemoglobin, mean corpuscular volume, and red cell mean index. The remainder of the blood was packaged in dry ice and shipped overnight to Pennington Labs, Louisiana. Not all of this blood was analysed due to problems with shipment or storage. On two occasions, frozen samples were inadvertently thawed over a weekend before being analyzed (16 samples on one occasion, 24 samples on another occasion). These samples were not included in the analyses of the data.

Table 7 lists the sample size for the major outcomes available for analyses over four time periods. Data from delivery (D)+2 days and D+6-9 months represent the status of the postpartum soldier at the two time periods of interest: at the end of pregnancy and after she is expected to return to Army fitness, performance and weight standards. Seventy-five percent of subjects who began initial data collection returned for the 6 month follow-up. Table 8 records the number of subjects by study group who failed to complete the study.

Table 6. Assays and the Site of Analyses.

Assays Assays		Site of Analyses
Ferritin	Serum	Pennington Labs
Total iron binding capacity	Serum	Pennington Labs
Iron	Serum	Pennington Labs
% saturation	Serum	Pennington Labs
Transferrin	Serum	Pennington Labs
Albumin	Serum	Pennington Labs
Folate	Serum	Pennington Labs
25-OH Vitamin D	Serum	Pennington Labs
Parathyroid hormone	Serum	Pennington Labs
Differential count	Whole blood	MAMC
CBC and RBC indicies	Whole blood	MAMC
Phosphorus	Urine	Pennington Labs
Calcium	Serum/Urine	Pennington Labs
Creatinine	Urine	Pennington Labs
Deoxypyridinaline	Urine	Pennington Labs

Table 7. Sample Size For Major Outcome Measures Over Four Time Periods.

Time Period	PPFM	PPAD	NPAD
Pregnancy, 3rd Trimester			
Blood	109	100	NA
Questionnaire	110	101	197
Delivery (D) +2 days			
Blood	111	108	208
DEXA	126	127	215
Pre-conception	NA	100	206
D+6 weeks			
Blood	91	75	161
Questionnaire 2	86	75	169
D+6-12 months			
Blood	98	93	165
DEXA	98	95	164
Questionnaire 3	94	95	158
Medical Records	NA	78	159
APFT scores	NA	76	189

Table 8. Reasons For Withdrawal From Study For Each Study Group.

	PPFM	**PPAD.	NPAD	Total
PCS*	5	7	12	24
ETS**	1	7	3	11
Too busy	0	1	- 1	2
Became Pregnant	4	3	5	12
Unable to contact	19	15	32	66
Total n(%)	29 (23.1%)	33 (26.0%)	53 (24.7%)	115 (24.6%)

^{*}Permanent change of station
** End Tour of Duty

Data Analysis

Separate databases were created for injuries/illnesses, fitness, body composition, nutrition questionnaire, bone mineral density and biochemical data using FileMaker Pro v3.0 (Claris Corp.). The relational capabilities of FileMaker Pro were then used to relate the databases together using the subject identification number as the key field. This made it possible to extract variables from different databases into new databases that were then used for analysis. Separate analyses were conducted for injuries/illnesses, fitness, body composition, nutrition questionnaire, bone mineral density and biochemical data.

Injury and illness rates were calculated using clinic visits as the numerator and the total person time a soldier was assigned to a unit after 1 January 1992 as the denominator. Injuries and illnesses were summarized for each subject and then exported to Excel (Microsoft Corp.) for computation of risk ratios (RR) and 95% confidence intervals (CI). RR and 95% CI were calculated comparing pregnancy and postpartum rates to baseline (preconception) rates.

We compared fitness within and across two study groups. Within group comparisons were performed for the pregnant soldier and change in fitness was assessed between the preconception and six month postpartum fitness levels using a paired t-test. Between group comparisons were performed for the two soldier groups using an unpaired t-test with StatView 4.51 (Abacus Concepts, Inc.). Body composition and weight change were performed for the two pregnant subject groups and the two soldier groups using an unpaired t-test.

Serum iron, ferritin, TIBC, transferrin, percent saturation, vitamin, B-12, calcium, phosphorus, albumin, PTH, and plasma folate, as well as urinary calcium, phosphorus, creatinine, and DPD data were analyzed by analysis of variance (ANOVA) using the GLM procedure of SAS (SAS, 1990). Due to the repeated sampling within subjects over phase, data were analyzed on the basis of a split-plot design, with group as the main-plot factor and phase as the sub-plot factor. Models accounting for the effects of group, subject within group, phase, and group by phase interaction were used. Subject within group was used as the error term to test group effects. For analyses utilizing all phases of sampling, the non-pregnant soldier group was excluded. For analyses including all groups, the

pregnancy phase was excluded. Non-pregnant soldier group phases were matched with pregnant phases as follows: phase 2 (sample 1) for non-pregnant matched with the immediately post-partum sample for pregnant, phase 3 (sample 2) for non-pregnant with the 6 week sample for pregnant, and phase 4 (sample 3) with the 6 month postpartum sample for pregnant. Data for samples falling within ranges found in Table 9 were included in this analysis.

Nutrition questionnaires were scanned using an OpScan 5 (NCS Corp.) bubble sheet scanner. Data were automatically entered into SPSS (SPSS, Inc.) and analyzed by Chi-square analysis.

Bone mineral density data were automatically entered into a dBase III formatted file by the DEXA software. Bone mineral density for the full body, femoral neck, and lumbar spine were compared between the groups and over time using repeated measures ANOVA.

In all analyses, a p-value of less than or equal to 0.05 was required for significance. Interval estimation (95% confidence intervals) were used where applicable.

RESULTS AND DISCUSSION

Demographics

Table 9 displays demographic and initial assessment data. The non-pregnant active duty group was older, more highly educated and had a higher percentage of officers compared to the postpartum groups. Postpartum family members consisted of mostly white, married subjects.

Table 9. Demographic Data.

Variable was	* NPAD	PPAD	RESISTENCE S
Age (mean yrs±SD)	29.9±7.0	25.2±4.2	26.2±5.2
Height (inches±SD)	64.7±3.0	64.4±2.3	64.4±2.3
Weight (kg±SD)			
pre-pregnancy	64.3±9.1	63.4±8.7	64.5±14.5
1-3 days postpartum	NA 🔭	75.1±11.4	75.6±13.8
Body Fat, Circumference (%± SD)			
1-3 days postpartum	NA	34.6±4.0	34.7±6.1
Military Rank (%)			
E1-4	31.5	60.6	42.7
E5-9	37.0	22.1	28.2
O1-3	25.0	16.3	20.9
O4-6	6.5	1.0	2.7
Retired	0.0	0.0	5.5
Race (%)			·
White	61.5	57.7	83.2
Black	22.5	29.8	6.2
Hispanic	6.5	9.6	8.0
Other	9.5	2.9	2.6
Marital Status (%)			
Married, accompanied	46.0	68.3	93.8
Married, unaccompanied	7.1	7.7	4.4
Divorced	19.2	3.8	0.0
Single	28.8	20.2	1.8
Highest Level of Education (%)			
High School	56.0	76.2	66.4
College	36.5	20.2	23.0
Graduate School	7.5	3.8	6.2
Smoker (%)	18.5	17.3	22.1

Timing Of Follow-Up Visits

The mean difference between follow-up dates and the delivery date for phases 1, 2, 3, and 4 were -30.9 \pm 1.8, 1.5 \pm 1.8, 42.8 \pm 2.6, and 198.3 \pm 2.2 days for the pregnant family member group. In the pregnant soldier group, the means were -41.5 \pm 1.9, 1.2 \pm 1.8, 43.3 \pm 2.7, and 193.8 \pm 2.2 days, respectively. The range of days considered to be within the phases are listed in Table 10. There were no differences between groups at any phase, except phase 1. In phase 1, pregnant soldiers were first seen earlier in pregnancy than pregnant family members (p<.01). Although statistically significant, this difference is not expected to have any physiological significance.

Table 10. Range Of Days Allowed For Follow-Up Visits In Each Phase.

Phase	Range
1	Up to 128 days before delivery
2	Up to 14 days post-partum
3	28 to 56 days post-partum
4	120 to 240 days post-partum

Physical Fitness

Postpartum soldiers performed worse than their non-pregnant counterparts in all three APFT events (Figures 2, 3, 4). In the postpartum period, 4.4% of the NP women failed their APFT (< 60 points in one or more events), compared to 17.1% of the PP women. Table 11 lists the percent of women who failed each event prior to the study period and during the 6-9 month postpartum period. Postpartum soldiers in this population were almost 4 times as likely to fail their first postpartum test compared to non-pregnant female soldiers.

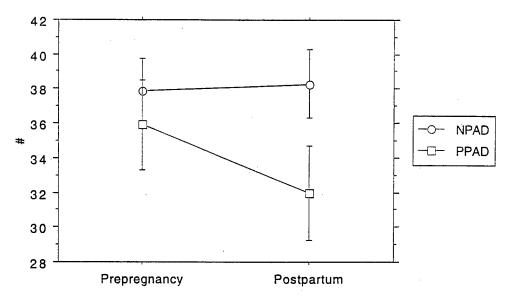


Figure 2. Number of pushups performed at the pre-pregnant and postpartum APFT. There was a significant difference in the change of pushups over time, p=0.0044, by repeated measures ANOVA. Error bars are 95% CI.

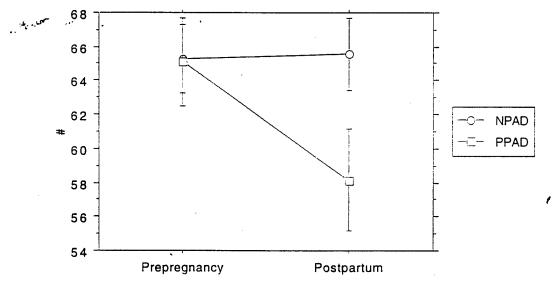


Figure 3. Number of sit-ups performed at the pre-pregnancy and postpartum APFT. There was a significant difference in the change of sit-ups over time, p<0.0001, by repeated measures ANOVA. Error bars are 95% CI.

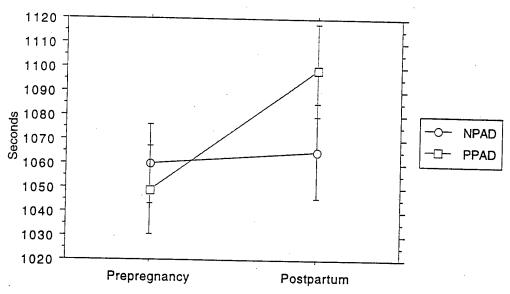


Figure 4. Length of time (seconds) to complete the 2 mile run performed at the pre-pregnancy and postpartum APFT. There is a significant difference in the change of run times over time, p=0.0015, by repeated measures ANOVA. Error bars are 95% CI.

Table 11. Failure Rate (%) At APFT 1 (Pre-pregnancy Period) And At APFT 2 (6-9 Postpartum) For Each Event, (RR = relative risk, 95% CI = 95% confidence interval).

APFT 1	NP	PP	RR	95% CI
Pushup failure rate	0.0	2.0	-	-
Sit-up failure rate	1.5	4.0	2.77	0.62 <rr<12.40< td=""></rr<12.40<>
Run failure rate	3.0	6.1	2.03	0.66 <rr<6.30< td=""></rr<6.30<>
Total failure rate	3.5	9.1	2.60	0.97-RR-6.97
APPT2	≥NP	PERM	RR	95% OT
Pushups failure rate	0.5	1.3	2.47	0.16 <rr<39.55 <="" td=""></rr<39.55>
Sit-ups failure rate	0.0	6.6		-
Run failure rate	3.8	10.5	2.75	0.97 <rr<7.59< td=""></rr<7.59<>
Total failure rate	4.4	17.1	3.89	1.61 <rr<9.39< td=""></rr<9.39<>

The percentage of NP women who failed their APFT was lower than the failure rate of women Army wide (13.5%)(42). However, the mean age of our NP women was 29.9±7 years and in the age category 27-31 and 32-36 years, the proportions who failed Army wide were 6.5% and 6.1%, respectively(42). These numbers more closely resemble the failure rates in our non-pregnant population.

Seventy-four percent of the soldiers returned to within 10% their prepregnant 2 mile run time 6-9 months postpartum, while only 53% returned to within 5% of their pre-pregnant time (Figure 5). Women who smoked performed fewer pushups and sit-ups and had slower run times at both pre-pregnancy and postpartum APFTs, Figure 6, 7, 8.

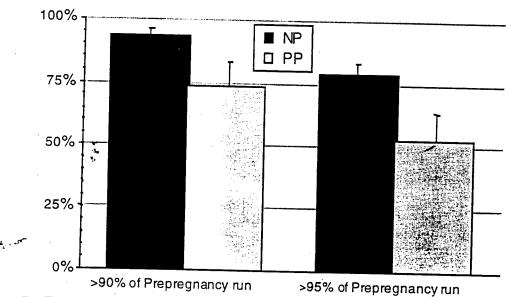


Figure 5. Proportion of soldiers who returned to their pre-pregnant two mile run time at their first postpartum APFT. Error bars are 95% confidence intervals. NP= non-pregnant, PP = postpartum.

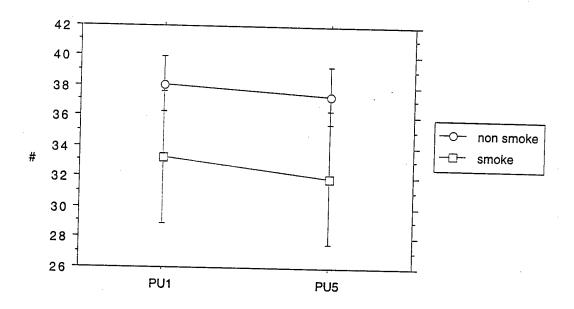


Figure 6. Number of pushups for smokers and non-smokers at the prepregnancy, PU1, (p=0.0027) and postpartum, PU5, (p<0.0001) APFT. Error bars are 95% CI.

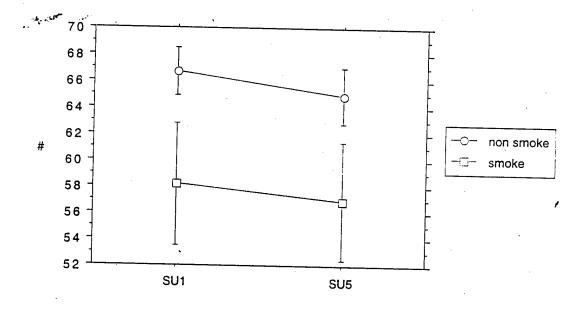


Figure 7. Number of sit-ups for smokers and non-smokers at the pre-pregnancy, SU1, (p=0.0027) and postpartum, SU5, (p<0.0001) APFT. Error bars are 95% CI.

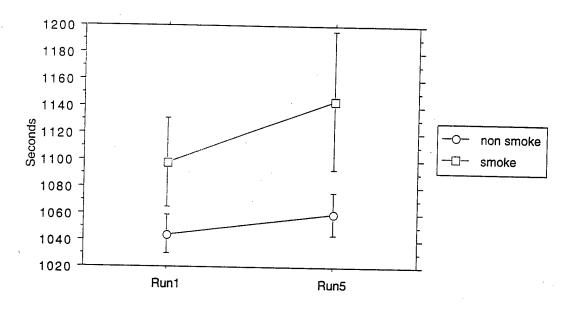


Figure 8. Run times for smokers and non-smokers at the pre-pregnant, Run1, (p=0.0027) and postpartum, Run5, (p<0.0001) APFT. Error bars are 95% CI.

Injury and Illness

We documented 808 injuries and 2002 illnesses in 237 female soldiers who averaged 3.85 years of medical history totaling 332,772 days at risk. The crude injury and illness rates for these soldiers were 7.3 and 18.0 per 100 soldiers per month, respectively. Stratifying for postpartum status, injury and illness rates increased during the postpartum period when the soldier returned to duty. The baseline (preconception) injury rate was 7.6 per 100 soldiers per month and rose 35-37% in the postpartum period compared to the baseline period. Table 12 lists the injury rates for each period of interest, the rate ratio compared to the baseline rate and its associated 95% CI. When injuries resulting in time lost from duty were considered, the postpartum rates were 29-31% higher than the baseline period, Table 13.

Table 12. Injury Rates, Rate Ratios (RR) and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

PERIOD	INJURY RATE*	RR	(95% CI)
Baseline (preconception)	7.6	1.00	a was of a second
Pregnancy	2.9	0.39	(0.27 < RR < 0.55)
Convalescence	1.7	0.23	(0.07 <rr<0.72)< td=""></rr<0.72)<>
Full military duty, limited PT	10.2		(0.97 <rr<1.86)< td=""></rr<1.86)<>
Full military duty, full PT	10.4		(1.08 <rr<1.75)**< td=""></rr<1.75)**<>

^{*}per 100 soldiers per month

** p<0.05

Table 13. Time-Lost Injury Rates, Rate Ratios (RR) and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

Period	INJURY RATE*	RR (95% CI)
(preconception)	5.2	1.00
Pregnancy	1.9	0.37 (0.24 <rr<0.58)< td=""></rr<0.58)<>
Convalescence	0.6	0.11 (0.02 <rr<0.80)< td=""></rr<0.80)<>
Full military duty, limited PT	6.8	1.31 (0.88 <rr<1.95)< td=""></rr<1.95)<>
Full military, duty full PT	6.7	1.29 (0.96 <rr<1.74)< td=""></rr<1.74)<>

^{*}per 100 soldiers per month

Most injuries occurred in the lower extremity (48.7%), followed by the trunk (30.1%) and the upper extremity (19.3%). By far, musculoskeletal sprains/strains/pain made up the largest proportion of injuries (67.5%) resulting in the largest burden of lost duty time (8678 days) for the Army. Fractures resulted in the longest average lost duty time, 80 ± 19 days per fracture. Table 14 summarizes the locations and type of injuries experienced by these soldiers.

The greatest proportion of clinic visits was for illness (71%) compared to injury (29%). The illness rate for these soldiers was quite high, 18.5 per 100 per month and increased in the postpartum period by 24%. When considering

Table 14. Frequency Distribution for Injury Diagnosis.

A1 : /	• Overall.	Lost to duty
Abrasion/contusion	79 (9.8%)	46 (8.4%)
Bite/sting	21 (2.6%)	4 (0.7%)
Blister	25 (3.1%)	8 (1.5%)
Dislocation/subluxation	3 (0.4%)	$\frac{3(1.5\%)}{3(0.5\%)}$
Fracture	28 (3.5%)	28 (5.1%)
Heat/cold injury	27 (3.3%)	18 (3.3%)
Laceration	19 (2.4%)	9 (1.6%)
Strain/sprain/pain	525 (65.0%)	369 (67.5%)
Tear/rupture	6 (0.7%)	5 (0.9%)
Tendonitis/bursitis/fascitis	71 (8.8%)	55 (10.1%)
Other		00 (10.170)
AVN of hip	1 (0.1%)	0 (0.0%)
Blood splash from patient	1 (0.1%)	0 (0.0%)
Inhalation	2 (0.2%)	2(0.4%)
Total 🐉	808 (100.0%)	547 (100.0%)

illnesses resulting in time lost from duty, there was a 75% increase during the postpartum period. Tables 15 and 16 summarize the illness rates for all illness visits and for those resulting in lost duty time, respectively.

Table 15. Illness Rates, Rate Ratios (RR) and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

Person	" Illness rate*	*RR (95% CI)
Daseline (preconception)	18.5	1.00
Pregnancy	9.2	0.50 (0.41 <rr<0.62)< td=""></rr<0.62)<>
Convalescence	9.3	0.50 (0.31 <rr<0.82)< td=""></rr<0.82)<>
Full military duty, limited PT	19.6	1.06 (0.84 <rr<1.33)< td=""></rr<1.33)<>
Full military duty,		1.00 (0.04<1M<1.33)
full PT	23.0	1.24 (1.06 <rr<1.46)**< td=""></rr<1.46)**<>

^{*}per 100 soldiers per month

** p<0.05

Table 16. Time-Lost Illness Rates, Rate Ratios (RR) and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

PBROD	🚁 Illness rate*	RR (95% CI)
Baseline (preconception)	5.0	1.00
Pregnancy	2.8	0.57 (0.39 <rr<0.81)< td=""></rr<0.81)<>
Convalescence	2.3	0.46 (0.17 <rr<1.24)< td=""></rr<1.24)<>
Full military duty, limited PT	6 .8	1.35 (0.91 <rr<2.00)< td=""></rr<2.00)<>
Full military duty, full PT	8.8	1.75 (1.34 <rr<2.29)**< td=""></rr<2.29)**<>

^{*}per 100 soldiers per month

** p<0.05

Reproductive/gynecological (24.0%), upper respiratory (18.3%) and eye/ear/ nose/throat (EENT, 17.1%) complaints were the chief cause of illness clinic visits. Of these visits, 28% were caused by infections (Table 17).

Body Composition

The average pre-study body weights were 64.3±9.1, 63.4±8.7 and 64.5±14.2 kg for the NPAD, PPAD and PPFM subjects, respectively. Weight gained during pregnancy and measured within three days post-delivery for PPAD and PPFM was 24.4 and 24.1 lbs. PPAD lost slightly more weight and body fat than the PPFM by the 6-9 month follow-up period, Figures 9 and 10. Generally, most of the women participating in this study tended to be overweight by US Army standards. The proportion of NPAD, PPAD and PPFM who were overweight prior to the study period were 45.1, 45.5 and 33.9%, respectively. The proportion of PPAD women who were above the Army height and weight standard 6-9 months postpartum rose to 66.3%, while 37.5% failed the Army body fat standard circumference measures, Table 18.

Table 17. Frequency Distribution for Illness Diagnosis.

		A All Illuesses			e inces Requiring mo	ज्ञी।
	Protai Count	Non-Infectious (%): "T	$f_{\rm sin}(\mathcal{O})$ ili $f_{\rm sin}(\mathcal{O})$	Тона (сочит т, п (??)	Nordiniedijons (69) u	ំ (<i>(o_d)</i> ម៉ែ _ញ ទីកាលរួមទាំរ៉ូប៉ា
Cardiovascular	(J. 18. 18. 18. 18. 18. 18. 18. 18. 18. 18	33 (3.9%)	1 (0.1%)	(2000)))(3 (1.6%)	0 (0.0%)
Dermatological	(%9'6) (8'2%)	155 (18.1%)	35 (3.0%)	(%d:8);[11]4 <u>[</u> 5]	12 (6.4%)	5 (1.3%)
Eent	(%8.91) [16.8%]	74 (8.6%)	263 (22.9%)	(%291) 16:44	9 (4.8%)	82 (21.9%)
Endocrine	(\$9.0).21.3	12 (1.4%)	0.0%)	(%+0) 70 mg	2 (1.1%)	0 (0.0%)
Gastrointestinal	(%1.51) 282 x + 1	94 (11.0%)	188 (16.4%)	(%), 191.62	37 (19.7%)	130 (34.8%)
Hematological	(%1.0).2	2 (0.2%)	0 (0.0%)	(%50) [1 (0.5%)	0 (0.0%)
Hepatic	4.(0.5%)	2 (0.2%)	2 (0.2%)	(%F,0)(2,% (%)	1 (0.5%)	1 (0.3%)
Immunological	(%/1) 198 (常) 4	35 (4.1%)	0 (0.0%)	0.62011	7 (3.7%)	0 (0.0%)
Musculoskeletal	(%8/0)/91(4/4)	16 (1.9%)	0 (0.0%)	10/03/01	7 (3.7%)	(%0'0) 0
Psychological	(1,54,92)(1,6%)	32 (3.7%)	0 (0.0%)	(#GO)19 25 34	5 (2.7%)	0.000) 0
Renal		21 (2.5%)	82 (7.1%)		4 (2.1%)	19 (5.1%)
Reproductive/gynecological	(0.9)87071177	237 (27.7%)	237 (20.6%)	(9) (10) (9)	54 (28.7%)	10 (2.7%)
Respiratory/pulmonary	(%0'81)(198;41	20 (2.3%)	341 (29.7%)	(%EEE) 1813	4 (2.1%)	127 (34.0%)
Other		1 (0.1%)	0 (0.0%)	(%0,0).0	0 (0.0%)	0.00%)
Dehydration	I WE'D IS THE	6 (0.7%)	0 (0.0%)	(%) (0) (e)	3 (1.6%)	0 (0.0%)
Eating disorder		1 (0.1%)	0 (0.0%)	(65.0)	1 (0.5%)	0 (0.0%)
Fatigue		6 (0.7%)	0 (0.0%)	(6/00/05/31)	0 (0.0%)	0.00%)
Nervous		77 (9.0%)	0 (0.0%)	0/9/9///6	37 (19.7%)	0 (0.0%)
Overweight		25 (2.9%)	0 (0.0%)	(0.000,0.00)	0 (0.0%)	0 (0.0%)
Syncope	0.000	2 (0.2%)	0 (0.0%)	$(\psi S(0))_{1,2,2,3}$	1 (0.5%)	0 (0.0%)
Tobacco/alcohol abuse	100001916	5 (0.6%)	0 (0.0%)	04 0 00;	0 (0.0%)	0 (0.0%)
Total	**2005*(100:0%)	856 (100.0%)	1149 (100.0%)	* 562 (10010%)	188 (100.0%)	374 (100.0%)

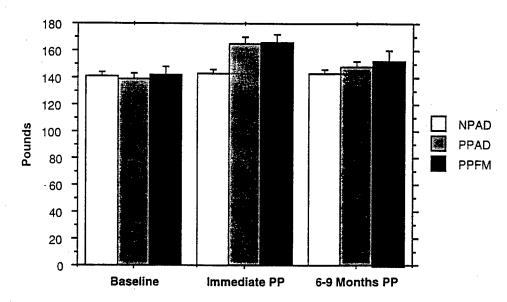


Figure 9. Body weight (pounds) for the three groups pre-pregnancy (baseline), immediately postpartum and 6-9 months postpartum. Error bars are SE.

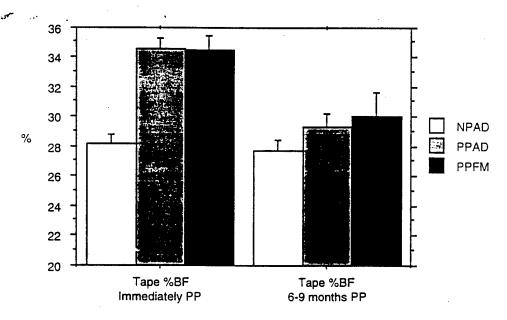


Figure 10. Percent body fat (measured by circumferential taping) for the three groups 2-3 days postpartum and 6-9 months postpartum. Error bars are SE.

Table 18. Percent Overweight And Overfat by US Army Standards Prior To Pregnancy And 6-9 Months Postpartum.

	Pre-pregnancy	6-9 months Postpartum				
Group.	%overweight	% % overweight	% overfat by taping	% overfat by DEXA		
NPAD	45.1	48.3	24.4	42.3		
PPAD	45.5	66.3	37.5	64.9		
PPFM	33.9	58.3	43.8	72.2		

Bone Mineral Density

Figure 11 demonstrates the full body, lumbar spine and femoral neck BMD for all groups immediately postpartum and 6-9 months later. When comparing the two AD populations, there was no statistical difference in BMD at the first DEXA... The BMD was consistently higher in the PPAD compared to the PPFM. When compared in the 6-9 month period, this difference was significant for all sites, (full body, p=0.0002; lumbar spine, p=0.0033; femoral neck, p=0.0291). Both postpartum groups continued to lose trabecular bone density (the spine and femoral neck) over time. Breast feeding at 6-9 months resulted in a significant loss of BMD in all areas (full body, p=0.0011; lumbar spine, p<0.0001; femoral neck, p=0.0002), Figures 12, 13, 14.

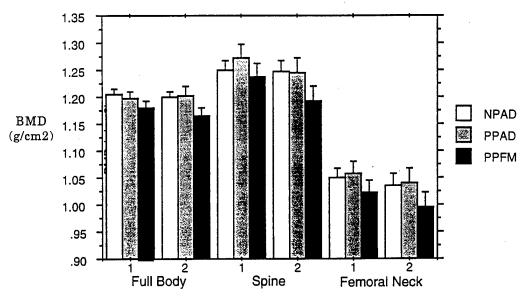


Figure 11. BMD (g/cm2) for the full body, lumbar spine, and femoral neck at two time periods; period 1, immediately postpartum and period 2, 6-9 months postpartum. Error bars are 95% CI.

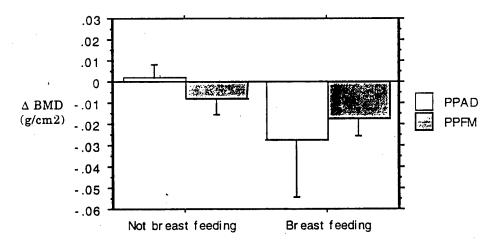


Figure 12. Change in full body BMD (g/cm2) in postpartum women who were breastfeeding at least 25% of the time at 6-9 months. Error bars are 95% CI.

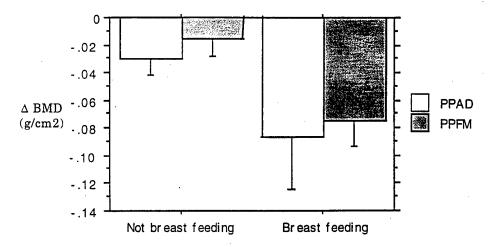


Figure 13. Change in lumbar spine BMD (g/cm2) in postpartum women who were breastfeeding at least 25% of the time at 6-9 months. Error bars are 95% CI.

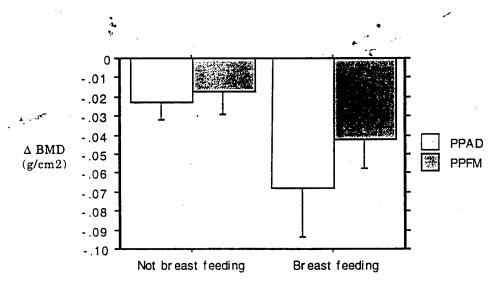


Figure 14. Change in full body BMD in postpartum women who were breastfeeding at least 25% of the time at 6-9 months. Error bars are 95% CI.

Biochemical Markers, Calcium Status

There were significant effects of group, phase, and group by phase interaction on total serum calcium concentrations. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. In pregnant subjects, calcium concentrations declined from late pregnancy to immediately post-partum (p<.01), then were increased at 6 weeks and 6 months to

levels greater than phase 1 or 2 (p<.01). Calcium did not change with phase in non-pregnant soldiers. Concentrations in these soldiers were greater than in the pregnant groups at phase 2 (p<.01) but were similar by phases 3 and 4, Figure 15.

There were significant effects of group, phase, and group by phase interaction on serum phosphorus levels. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. Serum phosphorus increased from phase 1 to phase 2 (p<.01), remained elevated at phase 3, and then declined (p<.01) by phase 4 to levels similar to phase 1. Serum phosphorus was higher in pregnant subjects than in non-pregnant subjects at both phase 2 and phase 3 (p<.01). By phase 4, concentrations in the pregnant family member group declined to levels similar to non-pregnant soldiers, while the pregnant soldier group was still elevated above the non-pregnant group (p<.05), Figure 16.

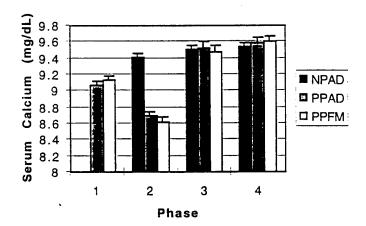


Figure 15. Serum Calcium concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

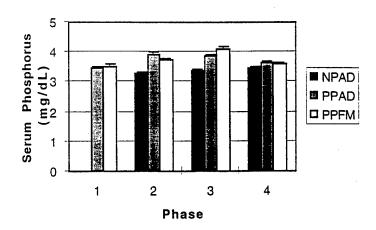


Figure 16. Serum phosphorus concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Serum PTH concentrations were affected by group, phase, and the group by phase interaction, Figure 17. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. Concentrations were lowest in the pregnant groups at phases 1 and 2, then increased by phase 3 (p<.01) in both groups and continued to increase slightly through phase 4 (p<.05) in the pregnant soldier group, while the pregnant family member group did not change significantly from phase 3 to 4. The non-pregnant group exhibited some fluctuation in serum PTH, with no difference between phases 2 and 3 but a slight though significantly lower concentration at phase 4 (p<.01). Levels in non-pregnant soldiers were significantly greater than those in the pregnant groups at phase 2 (p<.01). The groups were similar at phase 3, and PTH concentrations were higher in the postpartum groups at phase 4 (p<.01). Concentrations of PTH in the pregnant groups at phase 4 were similar to those observed at phases 2 and 3 in the non-pregnant soldier group.

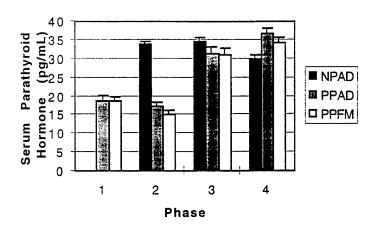


Figure 17. Serum parathyroid hormone concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were effects of phase and group by phase interaction on serum vitamin D levels Figure 18. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. Concentrations declined from phase 1 to phase 2 (p<.01) in both pregnant groups. In the pregnant family member group, concentrations remained stable from phase 2 onward. In the pregnant soldier group, there was an increase at phase 3 (p<.01) followed by a decline at phase 4 (p<.01). In non-pregnant soldiers, concentrations increased from phase 1 to phase 2 (p<.04) and did not change significantly from phase 2 to phase 3. At phases 1 and 3, concentrations in the pregnant soldier group were lower (p<.01) than in the non-pregnant soldier group. In pregnant family members, concentrations differed from the non-pregnant soldier group only at phase 4, when vitamin D concentrations in the pregnant family member group were lower (p<.01).

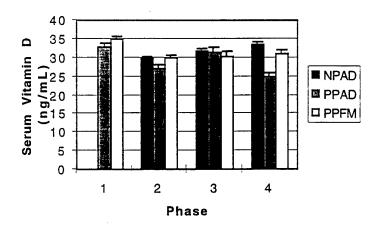


Figure 18. Serum 1,25 (OH)2-vitamin D concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

4.5

Urinary DPD concentrations were affected by group, phase, and the group by phase interaction, Figure 19. Values for pregnant soldiers and pregnant family members differed significantly only during phase 1 (p<.05). In both pregnant groups, urinary DPD concentrations increased from phase 1 to phase 2 (p<.05), then declined from phase 2 to phase 3 (p<.01) to levels similar to phase 1. By phase 4, urinary DPD declined to levels lower than at any previous phase point (p<.01). Urinary DPD was higher in pregnant than in non-pregnant groups at phases 2, 3, and 4 (p<.01). Within the non-pregnant group, urinary deoxypyrridinoline did not differ significantly with phase.

There were significant effects of phase and group by phase interaction on urinary calcium levels, Figure 20. Urinary calcium was higher in pregnant family members than in pregnant soldiers during phases 1 (p<.01) and 2 (p<.05). In both pregnant groups, concentrations decreased by phase 2 (p<.01), continued to decline to phase 3 (p<.01) and remained stable to phase 4. From phase 3 onward, concentrations in the two pregnant groups were similar. Urinary calcium concentrations remained stable across phases in the non-pregnant soldier group. At phase 2, concentrations in the pregnant groups were higher than those in non-pregnant soldiers (p<.01). At phases 3 and 4, urinary calcium was lower in pregnant than in non-pregnant groups (p<.05).

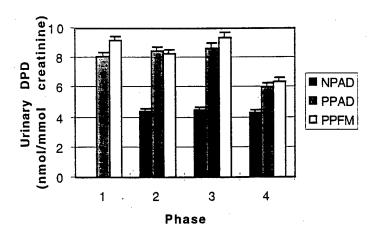


Figure 19. Urinary deoxypyrridinoline (DPD) concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

4

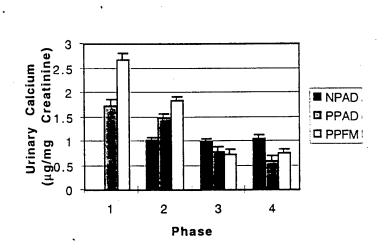


Figure 20. Urinary Calcium concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were effects of group, phase, and group by phase interaction on urinary phosphorus levels, Figure 21. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point.

Concentrations increased numerically from phase 1 to 2 in pregnant family members, then declined progressively thereafter to levels at phase 4 which were

lower than at any other phase (p<.01). In pregnant soldiers, concentrations increased numerically from phase 1 to 2, then declined from phase 2 to 3 (p<.01) and continued to decline to levels at phase 4 which were lower than at any other phase point (p<.01). At phase 2, urinary phosphorus was higher in pregnant than in non-pregnant subjects (p<.01). At phase 3, concentrations were higher in pregnant family members (p<.05) but not in pregnant soldiers, as compared to non-pregnant subjects. By phase 4, no differences among groups were noted.

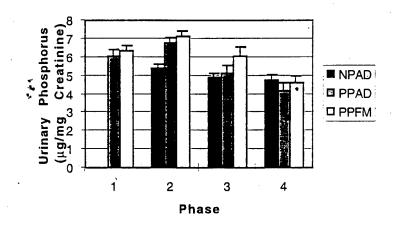


Figure 21. Urinary phosphorus concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were effects of group, phase, and group by phase interaction on urinary creatinine levels, Figure 22. Urinary creatinine was higher in pregnant soldiers than in pregnant family members at phase 1 (p<.01). Concentrations declined from phase 1 to phase 2 (p<.01) in both the pregnant soldier and the pregnant family member groups. By phase 3, values increased in both groups (p<.01), with a higher creatinine level in pregnant soldiers than in the pregnant family member group (p<.01). Values in both groups increased numerically to phase 4. At phase 4, values in pregnant soldiers were greater than in pregnant family members (p<.01) and values in both groups were greater than in the respective phase 1 samples (p<.01). In non-pregnant soldiers, urinary creatinine increased numerically from phase 2 to 3 and then declined (p<.01) from

phase 3 to 4, to return to levels similar to phase 2. At phase 2, concentrations were higher in the non-pregnant soldier group than in either pregnant group (p<.01). At phase 3, concentrations were greater in non-pregnant soldiers than in pregnant family members (p<.05) but did not differ from pregnant soldiers. At phase 4, concentrations were higher in pregnant soldiers than in non-pregnant soldiers (p<.01). Creatinine concentrations observed here were within normal (43). Because these values were derived from spot urine samples, further interpretation of these data will not be discussed, except in relation to phosphorus, calcium, and deoxypyrridinoline excretion.

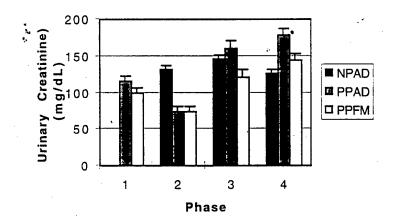


Figure 22. Urinary Creatinine concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Patterns and concentrations of all parameters studied were within normal ranges for each group(43-45). The patterns of change observed in the pregnant soldiers and pregnant family members are also consistent with patterns expected for normal (45, 46). Urinary DPD was higher in pregnant family members than in pregnant soldiers during late pregnancy but values were similar at all subsequent phases. Values for all other bone mineral related parameters were similar between the pregnant groups. Taken together, these data suggest that bone mineral metabolism and calcium status are similar in soldiers and family members during pregnancy.

As expected, the data reflect periods of increased bone resorption and turnover, progressive hemodilution in late gestation, and compensatory mechanisms designed to meet calcium needs during gestation and lactation. The data are consistent with a normal course of events. By 6 months post-partum, most parameters returned to normal non-pregnant values. However, in the pregnant groups, urinary DPD remained elevated at 6 months and urinary calcium remained depressed. These observations may reflect continuing adjustments in bone mineral metabolism following pregnancy, which may involve lactation in some women. Reduced urinary calcium may reflect renal calcium conservation to meet the needs of lactation or for replenishment of bone mineral mass which may have been lost due to gestation or lactation. Elevated urinary DPD may reflect bone resorption, potentially to meet the needs of lactation. It may also reflect an overall increase in bone turnover, including anabolic bone metabolism. However, this cannot be confirmed because no endocrine or metabolic measure of osteoblastic activity was performed in the present study. Regardless of potential underlying explanations for the urinary calcium and DPD levels in the pregnant groups at 6 months, these data do suggest that bone mineral metabolism has not returned to a completely normal non-pregnant state by six months post-partum.

Biochemical Markers, Iron and Folate Status

There were significant effects of group, phase, and group by phase interaction on serum iron, Figure 23. In the pregnant groups, concentrations were highest during phase 1, then declined by phase 2 (p<.01) and increased by phase 3 (p<.01). In pregnant family members, there was a further increase from phase 3 to phase 4 (p<.05) to a concentration similar to phase 1. In pregnant soldiers, concentrations did not change significantly from phase 3 to 4. However, phase 3 and 4 levels were similar to phase 1. Some variation among phases was observed in the non-pregnant soldier group, with phase 2 concentrations lower than phase 4 (p<.05) but not different from phase 3. Serum iron was higher in non-pregnant soldiers than in either pregnant group at phase 2 (p<.01). By phase

3, values were similar among groups. At phase 4, serum iron in the non-pregnant soldier and pregnant family member groups were similar and both were greater than concentrations in the pregnant soldier group (p<.01).

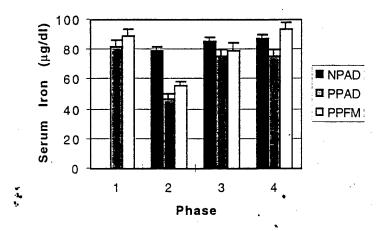


Figure 23. Serum iron concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were significant effects of group, phase, and group by phase interaction on serum ferritin concentrations, Figure 24. In both pregnant groups, concentrations were lowest during phase 1 and increased by phase 2 (p<.01). Concentrations were similar at phase 1 but were higher in the pregnant soldier group than in the pregnant family member group by phase 2 (p<.01). Concentrations increased from phase 2 to 3 in the pregnant family member group (p<.01), while levels in the pregnant soldier group remained stable. Concentrations in the two pregnant groups did not differ at phase 3. However, by phase 4, concentrations in the pregnant family member group were higher than in the pregnant soldier group (p<.01). Serum ferritin did not change with phase in the non-pregnant soldier group. At phase 2, concentrations were lower than in the pregnant soldier group (p<.01). By phase 3, levels in the non-pregnant soldier group were lower than either of the pregnant groups (p<.01). At phase 4, concentrations in the non-pregnant soldier group were lower than in the

pregnant family member group (p<.01) but were similar to the pregnant soldier group.

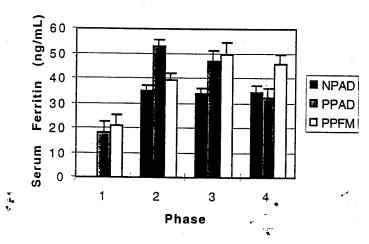


Figure 24. Serum ferritin concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Total iron binding capacity (TIBC) was affected by phase and group by phase interaction effects, Figure 25. There were no differences between the pregnant groups at any phase. In each of the pregnant groups, TIBC was highest during phase 1, then declined by phase 2 (p<.01), continued to decline to phase 3 (p<.05), and then increased by phase 4 (p<.01). Phase 4 levels were similar to phase 2 in the pregnant soldier group but were lower than phase 2 in pregnant family members (p<.05). There was no change in TIBC in the non-pregnant soldier group. Values in this group were lower than those in the pregnant family member group (p<.05) at phase 2. The values were numerically lower than in the pregnant soldier group at this time (p<.10). TIBC in the non-pregnant soldier group was higher than either pregnant group at phase 3 (p<.01). By phase 4, no significant difference among groups was evident.

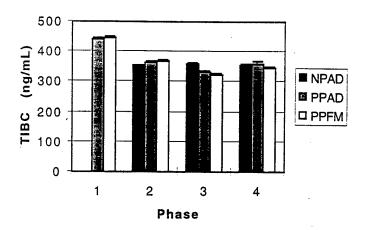


Figure 25. Total iron binding capacity (TIBC) concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were significant effects of phase and group by phase interaction on transferrin concentration, Figure 26. In both pregnant groups, concentrations were highest at phase 1 and declined by phase 2 (p<.01). At phase 1, concentrations did not differ between pregnant groups. However, by phase 2, transferrin was lower in the pregnant soldier group than in the pregnant family member group (P<.05). Concentrations continued to decline in each pregnant group to phase 3 (p<.01), when concentrations did not differ between the two groups. From phase 3 to phase 4, concentrations increased in each pregnant group (p<.05), with the phase 4 transferrin concentration higher in the pregnant soldier group than in the pregnant family member group (p<.01). In the nonpregnant soldier group, transferrin concentration did not change with phase. During phase 2, transferrin was lower in the non-pregnant soldier group than in either pregnant group (p<.01). At phase 3, concentrations in the pregnant groups were lower than in the non-pregnant soldier group (p<.01). At phase 4, the soldier groups were similar, while transferrin concentrations in the pregnant family member group were lower (p<.01) than in either soldier group.

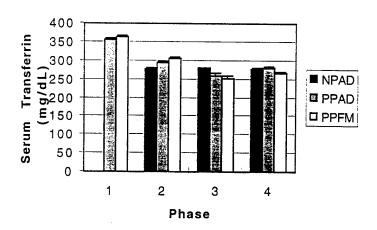


Figure 26. Serum transferrin concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were effects of group, phase and the group by phase interaction on transferrin saturation, Figure 27. At each of phases 1 (p<.01), 2 (p<.01), 3 (p<.05), and 4 (p<.01), percent saturation was lower in the pregnant soldier group than in the pregnant family member group. In both pregnant groups, saturation declined from phase 1 to phase 2 (p<.01) and then increased from phase 2 to phase 3 (p<.01) and did not change significantly thereafter. In the non-pregnant soldier group, transferrin saturation did not change with phase. Saturation was higher in the non-pregnant soldier group than in either pregnant group at phase 2 (p<.01). During phases 3 and 4, percent saturation in the pregnant family member group was higher than in the non-pregnant soldier group (p<.01). At phase 3, saturations were similar in the two soldier groups. During phase 4, transferrin saturation was higher in the non-pregnant soldier group than in the pregnant soldier group (p<.05).

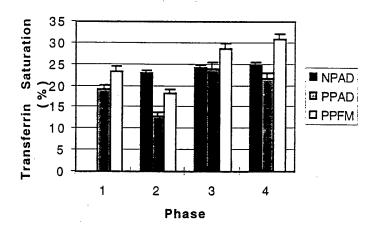


Figure 27. Transferrin saturation concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

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Serum folate was affected by group, phase and the group by phase interaction, Figure 28. Serum folate was numerically greater (p<.10) in the pregnant family member group than in the pregnant soldier group during phases 1 and 2. During phases 3 and 4, this difference was significant (p<.01). In each pregnant group, serum folate declined from phase 1 to 2 (p<.01), increased from phase 2 to 3 (p<.01), and then declined from phase 3 to 4 (p<.01). Concentrations remained stable across phases in the non-pregnant soldier group. During each phase, serum folate was higher in the pregnant family member group than in the non-pregnant soldier group (p<.01). During phase 2, concentrations were similar in the two soldier groups. During phase 3, concentrations were greater in the pregnant soldier group (p<.01). In phase 4, concentrations were similar in the two soldier groups.

Phase and group by phase interaction effects on vitamin B-12 concentration were present, Figure 29. Concentrations did not differ between the pregnant groups at any phase. Concentrations declined numerically from phase 1 to 2 in both the pregnant soldier (p<.10) and pregnant family member groups (p>.10). Concentrations then increased from phase 2 to 3 (p<.01) and subsequently

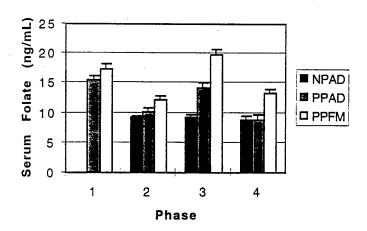


Figure 28. Serum folate concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

declined from phase 3 to 4 (p<.01) in each pregnant group. Vitamin B-12 concentrations did not change with phase in the non-pregnant soldier group. Concentrations in the non-pregnant soldier group were higher than in the pregnant groups during phase 2 (p<.01) and lower than in the pregnant groups at phases 3 and 4 (p<.01).

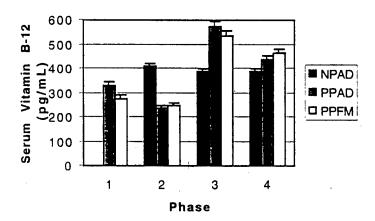


Figure 29. Serum vitamin B-12 concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Means for all variables examined were within normal limits (43, 44) for the non-pregnant soldier group and remained stable. In general, the patterns of change of all variables in the pregnant groups were as expected, reflecting late pregnancy with progressive hemodilution, followed by gradual recovery to the non-pregnant state (45).

During late pregnancy and up to 6 weeks postpartum, it appears that iron status was slightly lower in the pregnant soldier group than in the pregnant family member group. Although TIBC and serum iron, transferrin and ferritin concentrations were similar during this period, percent transferrin saturation was consistently lower in the pregnant soldier group. By 6 months postpartum. the difference in iron status was more clear, with a higher transferrin concentration and lower transferrin saturation, serum ferritin concentration, and serum iron concentration observed in the pregnant soldier group than in the pregnant family member group. As compared to the non-pregnant soldier group, serum ferritin and transferrin saturation were lower in the pregnant soldier group, suggesting that iron status was lower in pregnant soldier group. In contrast, iron status in the pregnant family member group appears to have been higher than that in the non-pregnant soldier group at 6 months postpartum, as indicated by higher ferritin, transferrin saturation and serum iron in the pregnant family member group. As a whole, the data related to iron status suggest that pregnant soldiers have not fully returned to the level of iron status found in non-pregnant soldiers by 6 months postpartum.

Vitamin B-12 status in both pregnant groups was similar and was above the non-pregnant state at 6 months postpartum. Folate status was lower in both soldier groups, as compared to the pregnant family member group. However, by 6 months postpartum, folate status in the pregnant soldier group appeared to be similar to the non-pregnant soldier status.

NUTRITION

Table 19 summarizes the nutrient intake for all groups during the postpartum period. When comparing reported nutrient intakes between groups, no significant differences existed in mean energy intake between PPFM (1877±647).

kcal) and PPAD (1822±731) during pregnancy (initial survey). However, PPAD intake was significantly lower (p<0.05) than PPFM at phase three (PPFM - 1701 ± 593 kcal vs PPAD - 1457 ± 588 kcal) and phase four (PPFM - 1617 ± 682 kcal vs PPAD - 1393+493 kcal). No significant differences were reported in energy intake between PPAD and NPAD at either phase three (PPAD - 1457±588 kcal vs NPAD -1402±540 kcal) or phase four (PPAD - 1393±493 kcal vs NPAD - 1388±493 kcal). Additionally, no differences were found between energy intakes of those women reporting that they were on diets versus those who were not. Reported intake in all three groups was lower than Recommended Dietary Allowances (RDA) of 2200 kcal per day (+ 300 kcal for pregnancy, and +500 kcal for lactation), which may be a reflection of the number of women reporting that they were on weight reduction and/or low-fat diets. Iron and folate were below RDA for all three groups in phases 2-4, and calcium in phases 2-4 for military women. For those women reporting special diets during phase two, 4.5% of NPFM and 9.5% of PPAD stated they were on weight reduction/low fat diets, even during pregnancy. For phase three, 17.4% of FM, 17.3% of PPAD, and 20.0% of NPAD reported weight reduction/low fat diets. At phase four 19.0% of PPFM continued on diets, while PPAD had the highest representation at 28.4%, and NPAD 18.2%. During pregnancy, only 87.4% of PPFM and 75.6% of PPAD reported regularly taking multivitamin supplements provided to them. Multivitamin intake after delivery was 78.7% for PPFM, 65.6% for PPAD, and 46.7% for NPAD, indicating that a majority of women continued to take supplementation.

Nutrient intake was similar to that of women in the US, as reported in NHANES III (47). Military women have also been compared to women athletes, having similar nutrient intake (48).

Table 19. Self Reported Nutritional Intake During the Postpartum Period in Active Duty Soldiers and Family Members.

Initial Survey*			Phase 3			Phase 4		100	
Nutrient.	PPEM:	PRAD	NPNP	RREME	BRADE	NPNP	PPFM	PPAD	NPNP
Energy (kcal)	1877	1822	1484 ^b	1701°	1457 ^{ac}	1402	1617	1393ª	1388
Protein (gm)	81.9	75.8	63.6⁵	74.8	62.4ª	61.7	70.9	59.5ª	60.2
Fat (gm)	72.9	69.4	59.7°	66.9	52.5ª	54.5	64.8	53.6ª	56.2
CHO (gm)	227.3	226.6	171.3 ^b	202.3	183.5	16 3.3	189.0	165.9ª	158.4
Calcium (mg)	1311.0	1087.5ª	762.0°	1145.0	822.1ª	708.4	1005.4	692.7ª	724.2
Iron (mg)	13.2	12.2	10.8 ^b	12.2	9.6ª	10.5	11.1	9.4ª	10.1
Folate (mcg)	392.2	354.5	267.8 ^b	337.7	281.4ª	260.5	294.9	239.5ª	251.4

^{*}Initial survey was at phase 1 for PPFM and PPAD, phase 2 for PPNP

a Significantly different from NPFM (p<0.05)

b Significantly different from PPAD (p<0.05)

^c Significantly different from phase 2 (p<0.05)

CONCLUSIONS

- 1. A large proportion (48%) of pregnant soldiers failed to return to their prepregnancy fitness level 6-9 months postpartum. These postpartum soldiers were four times more likely to fail the APFT at their first postpartum fitness test as compared to non-pregnant female soldiers. These data support the popular trend in the Army to initiate a mandatory, graded postpartum PT program specifically targeted to this population.
- 2. Injury and illness rates for females not in CBT or AIT were 7.3 and 18.0 per 100 soldiers per month, respectively. These rates increased for women by one third when they return to duty and unit PT during the postpartum period. This rise in rates may be associated with poor fitness as described above. Poor nutrition associated with trying to lose weight is another factor that may contribute to this rate increase. Reported energy and nutrient intakes of military women were below RDA in both postpartum phases measured and were significantly lower than values reported by family members, suggesting that military women may have attempted to lose weight more rapidly to meet the Army weight standards. Continued emphasis on weight management at the expense of nutritional status is of concern for the health of military women.
- 3. Forty-five percent of active duty women participating in this study did not meet the Army's body weight standard. During the postpartum period when soldiers are required to meet the Army standard, this proportion increased to about 66%. More than one third of all postpartum soldiers at this time were determined to be overfat, as determined by the Army circumferential tape method.
- 4. Bone mineral density in trabecular bone was reduced in postpartum soldiers. This bone loss occurred after delivery and was increased in lactating mothers. Biochemical markers suggest that bone mineral metabolism had not returned to a normal non-pregnant state at 6-9 months. In addition, military women had significantly lower postpartum dietary calcium compared to FM, although both

military women and family members reported adequate dietary calcium intake during pregnancy. The reduced dietary calcium intake in the postpartum period, if continued, may be detrimental to future bone health.

5. Soldiers 6-9 months postpartum have not fully returned to the level of iron status found in non-pregnant soldiers. Inadequate iron intake, as well as sporadic use of multivitamin and iron supplements in military women may provide some explanation for this decline.

RECOMMENDATIONS

- 1. Studies should be pursued to determine if a mandatory, graduated postpartum physical training program would return a higher proportion of soldiers to their pre-pregnancy fitness level 6 months postpartum. This program should emphasize consistency and include both strength and aerobic conditioning.
- 2. More research is needed to determine if the US Army body fat standard for postpartum women is achievable. With 66% of these women overweight and 37% overfat 6-9 months postpartum, additional studies should be conducted to assess the effect of different postpartum exercise and dietary strategies on body composition and nutritional status.
- 3. Bone mineral density in lactating soldiers was reduced by about 5.5% 6-9 months postpartum. A longer prospective study would help to determine when bone mineral metabolism returns to a normal state and when trabecular bone density rebounds to normal.
- 4. Female soldiers assigned to Army units had injury rates far less than those in Combat Basic Training and Advanced Individual Training, while illness rates remained about the same. However, during the postpartum period, both these rates increased by about one third. This may be due to a host of factors including poor fitness, excessive weight, poor nutritional status, added stress of motherhood and other factors currently unknown. More studies are needed to determine the interaction of physical and psycho-social factors resulting from pregnancy on the health of soldiers who are required to return to full duty 6 weeks postpartum, and meet the Army body fat and Army fitness standards 6 months postpartum.

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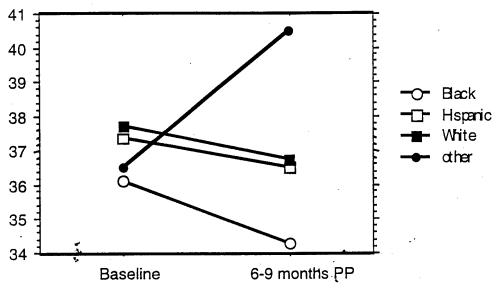
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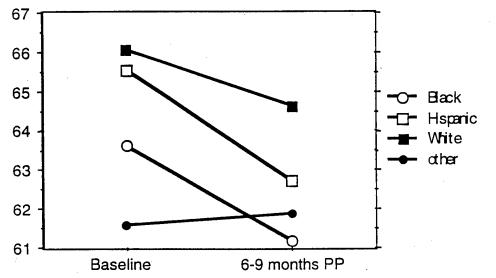
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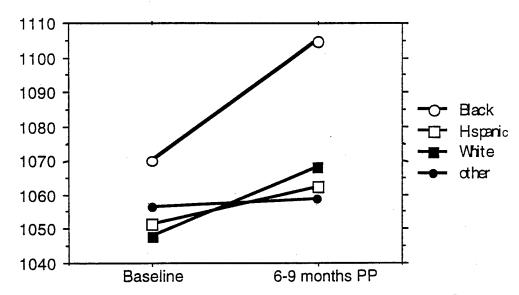
APPENDIX 1 FITNESS STRATIFIED BY RACE



Number of pushups performed at the pre-pregnancy and postpartum APFT, stratified by race.

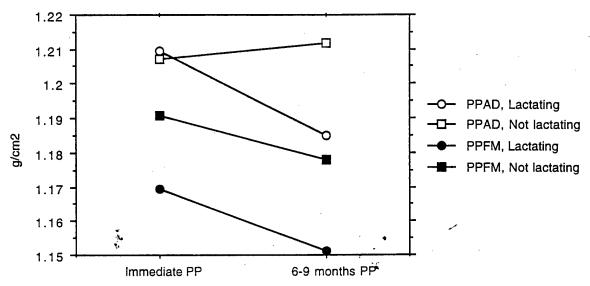


Number of sit-ups performed at the pre-pregnancy and postpartum APFT, stratified by race.

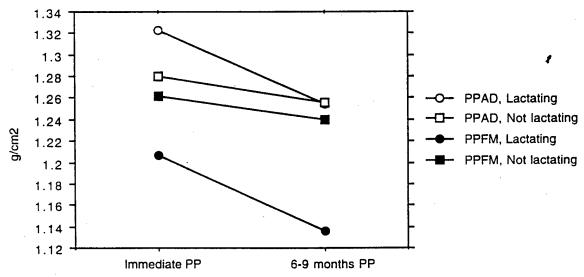


Two mile run times (seconds) performed at the pre-pregnancy and postpartum APFT, stratified by race.

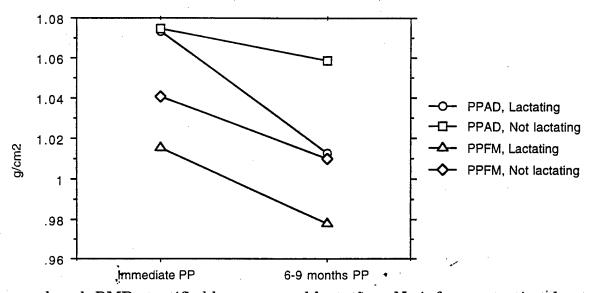
APPENDIX 2 BONE MINERAL DENSITY STRATIFIED BY GROUP AND LACTATION



Full body BMD stratified by group and lactation. No inference testing due to small sample sizes in each group.

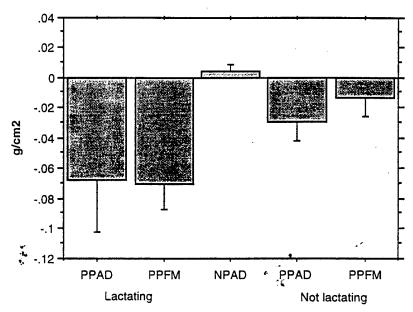


Lumbar spine BMD stratified by group and lactation. No inference testing due to small sample sizes in each group.

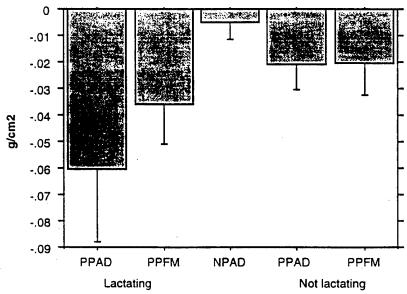


Femoral neck BMD stratified by group and lactation. No inference testing due to small sample sizes in each group.

APPENDIX 3
CHANGE IN BONE MINERAL DENSITY FOR ALL STUDY GROUPS DURING
THE POSTPARTUM PERIOD

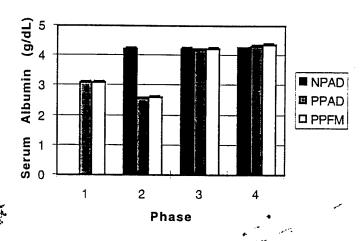


Change in lumbar spine BMD in postpartum soldiers and family members, and non-pregnant soldiers. Error bars are 95% confidence intervals.



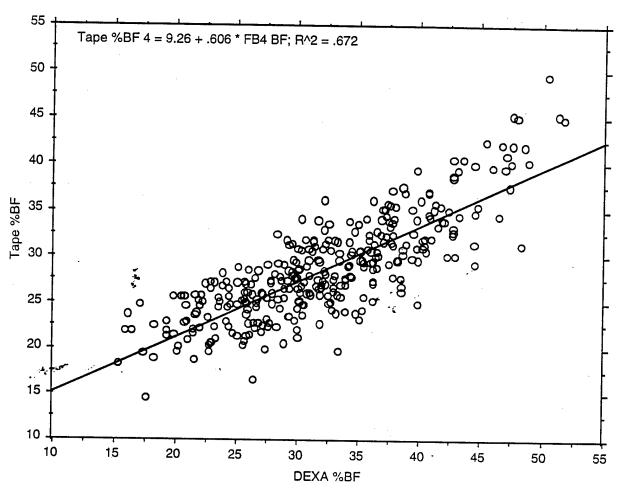
Change in femoral neck BMD in postpartum soldiers and family members, and non-pregnant soldiers. Error bars are 95% confidence intervals.

APPENDIX 4 SERUM ALBUMIN CONCENTRATIONS

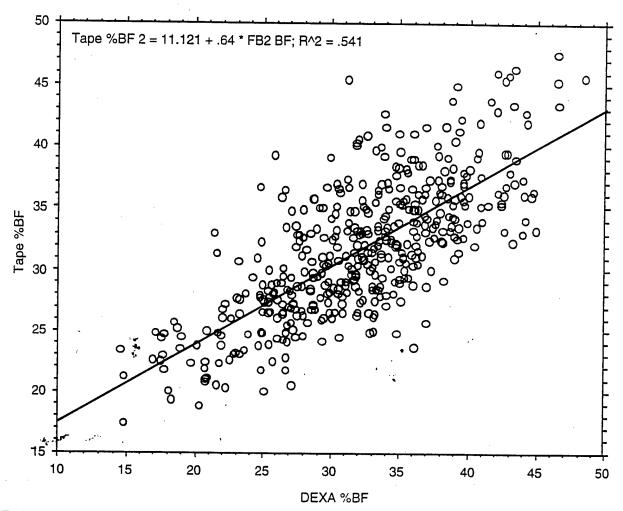


Serum albumin concentrations for all treatment groups at each phase of followup. Error bars are SE.

APPENDIX 5
CORRELATION BETWEEN DEXA AND US ARMY TAPE METHOD
FOR DETERMINING BODY FAT



Relationship between body fat as measured by DEXA and the US Army tape method 1-3 days postpartum.



Relationship between body fat as measured by DEXA and the US Army tape method 6-9 months postpartum.

APPENDIX 6 QUESTIONNAIRES

		Program Coldina and English 1	مين بسيماندي المحيد
/	Subject Numb	Pregnant Soldiers and Family Members	60001 6
•		Date: naire asks you some questions about your background, diet, activity level, and heal	<u> </u>
	Your answers	s will help us determine the effect of pregnancy on performance, health and nutrition	in nadits.
	This survey lo	ooks longer than it really is. It should only take you 30-45 minutes to complete. If	n in women.
	questions abou	out this survey, please ask for help from the person who gave this survey to you. Pl	you have any
	number 2 pend	icil to fill in the ovals. Thank you.	ease use a
			_
		BACKGROUND PLEASE USE A #2 PENCIL	
	1. What is you	our age? years	y
	2		Proper
	2. Are you cui		Mark
		Q NO	
		YES	
	•	a. How are you related to your military sponsor?	
		Spouse Daughter	
		Daughter	
		1 2 3 4 5 6 7 8 9	
	If NO:	b. What is your sponsor's rank?	7
			〈
		Retired WO	
	•	C. Are you employed?	
		c. Are you employed? NO	
		YES	
		_1 2 3 4 5 6 7 8 9	
	•	a. What is your current rank?	-
	If YES:		
	•	woodbook	
		h What is now a MOSS	
		b. What is your current MOS?	
	3. Which ethni	ic group do you belong to?	
		American Indian/Alaskan Native/Eskimo	
		Asian/Pacific Islander	
		Black/African	
		Hispanic	
		White/Caucasian, not of Hispanic origin	
		Other:	
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Postpartum (1)

SMOKING HISTORY AFTER YOU FOUND OUT YOU WERE PREGNANT

8. Have you	smoked 1 or more cigarettes after you FOUND OUT you were pregnant?
	NO
	YES
	a. Usually, how many days a week do you smoke?
If YES:	b. On those days, about how many cigarettes do you smoke per day?
	c. How many years have you been smoking cigarettes? years
9. Have you	quit smoking since you FOUND OUT you were pregnant?
	No, I never smoked No, I continue to smoke Yes, I quit smoking since I found out I was pregnant
•	a. How long ago did you quit smoking cigarettes? months
If YES:	b. How many days a week did you smoke?
	c. On those days, about how many cigarettes did you smoke per day?
	d. How many years did you smoke cigarettes before you quit? years
-».	ALCOHOL USE
wine, lie	ndicate the average number of days per week you had AT LEAST ONE alcoholic drink (beer, quor) both the month BEFORE you found out you were pregnant and AFTER you found out you egnant. Please indicate the average number of drinks you drank on those days.
	Average number of days per week you had at least one alcoholic drink
The mo	onth BEFORE you found out you were pregnant O <1 1 2 3 4 5 6 7 Lyou found out you were pregnant O <1 1 2 3 4 5 6 7
	Average number of drinks you drank on those days
	0 1 2 3 4 5 6+
The mo	nth BEFORE you found out you were pregnant you found out you were pregnant
	8c 9c cigs years per day
01234	5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 PLEASE DO NOT WRITE IN THIS BOX
8b cig	s per day 9a quit months 9d years
7	Page 2

SURVEY NETWORK $^{\mathsf{M}}$

Postpartum (1) PRIOR PREGNANCIES

	PRIOR PREGNANC	IES	(
11. Please fill in an oval under the app	proriate number for each it	em listed below, as they apply	to you.
Pregnancies, including this one Prior live births Miscarriages Living children Multiple birth pregnancies (twins, tr	iplets, etc.)	3 4 5 6 7 8	9 >10 9 = 10
	SE IN WHICH YOU PAR U FOUND OUT YOU W		
12. A few physical activities are listed activities you did six months BEF front of any activity you did not d back to the activities where you fi of days per week you did the activities.	ORE you found out you woo six months BEFORE you led in the oval under YES	rere pregnant. Fill in the oval to the found out you were pregnant to and fill in the ovals for the av	inder NO in
NO YES BEFORE YOU WI Walking Jog/Run Strength training (free w Stretching (flexibility) e Other exercise or sports	reights, nautilus, etc.)	AVERAGE NUMBER OF DAYS PER WEEK 2 3 4 5 6 7 3 4 5 6 7 3 4 5 6 7 3 8 8 8 8 8	MINUTES PER DAY
	I WHICH YOU PARTIC JND OUT YOU WERE F		
13. A few activities are listed below, for YES or NO for each activity for EA days per week and the minutes per of	CH TRIMESTER. Then s	o back and indicate the average	an oval under ge number of
NO YES FIRST TRIM Walking Jog/Run Strength training (free we Stretching (flexibility) ex Other exercise or sports (eights, nautilus, etc.) Rercises (list up to 2):	AVERAGE NUMBER OF DAYS PER WEEK 2 3 4 5 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	MINUTES PER DAY
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Form Number 75020-5-72	SURVEY NETWORK	TM 100 100 100 100 100 100 100 100 100 10	

DIET HISTORY AND HEALTH HABITS

7.	Are you on a	special diet?	Please fill in	no r	nore than	two ovals.
	zac jou on u	special alet.	I louse IIII II.		more man	two ovais.

○ No	OLow Fat	High Carbohydrate
Weight Loss	Vegetarian Vegetarian	Low Cholesterol
Weight Gain	High Protein	Low Salt

18. The following section is about your eating habits during your CURRENT pregnancy. Thinking back over the past month, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
Cantaloupe (in season) Grapefruit Hamburger, Cheeseburger, Meat Loaf	1/4 medium (1/2) 1/2 cup 1 medium		none 1 2 3 4 5 6 7	day week month
Winter Squash, Baked Squash		000	$lackbox{0}$	000

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you are apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you are something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you are the item.

Page 6



Postpartum (1)

·	·	Post	partum (1) ලෙව්ටුල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල්ල
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:
FRUITS, VEGETABLES		S M L	none 1 2 3 4 5 6 7 day week month
Apples, applesauce, pears	(1) or 1/2 cup		
Cantaloupe (in season)	1/4 medium	abla abl	
Oranges	1 medium	000	000000000
	60z glass	000	000000000000000000000000000000000000000
grapefruit juice			
Grapefruit	(1/2)		
Other fruit juices, fortified fruit drinks	60z glass	$\circ\circ$	000000000
Beans such as, baked beans,	3/4 cup	$\bigcirc\bigcirc\bigcirc$	MOOOOOOMOO
pintos, kidney, limas or in Chil	1		
Tomatoes, tomato juice	(1) or 60z	$\bigcirc\bigcirc\bigcirc$	
Broccoli	1/2 cup	$\bigcirc\bigcirc\bigcirc$	
Spin-di	1/2 cup	QQQ	QQQQQQQQQQ '
Mustard greens, turnip greens,	1/2 cup	$\bigcirc\bigcirc\bigcirc$	COOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
collards	· int		
Cole slaw, cabbage, sauerkraut Carrots or mixed vegetables	1/2 cup	$\mathcal{C}\mathcal{C}\mathcal{C}\mathcal{C}\mathcal{C}\mathcal{C}\mathcal{C}\mathcal{C}\mathcal{C}\mathcal{C}$	PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP
containing carrots	1/2 Cup	$\mathcal{O}\mathcal{O}\mathcal{O}$	
Green salad	I med. bowl		hoooooohoo !
Salad dressing, mayonnaise	2 Tablespoon	$\searrow \searrow \searrow$	
(including on sandwiches)			
French fries and fried potatoes	3/4 cop		0000000000
Sweet potatoes, yams	1/2 cup	\bowtie	
Other potatoes, incl. builed,	(1) or 1/2 cup	BBB	
baked, potato salad, mashed			
Rice	3/4 cup	000	000000000 <u> </u>
FRUITS, VEGETABLES EA	TEN MORE		NUMBER OF TIMES PER DAY:
THAN SEVEN TIMES A DA		S M L	8 9 10 11 12 13 14 15 16 17 18 19
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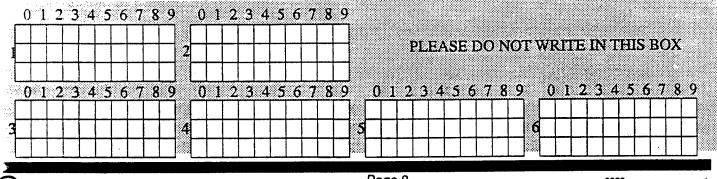
Page 7

Postpartum (1)

		1 0501	partum (1)		
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIM	IES:	PER:
MEAT, LUNCH ITEMS Hamburgers, cheeseburgers, meat loaf	1 medium	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	none 1 2 3 4 5		day week month
Beef stew or pot pie with carrots, other vegetables	4oz 1 cup 4oz		88888 0000		
Fried chicken	4oz (2 chops) 2sm/11g piece	A EA EA B		388	888
stewed or broiled Fried fish or fish sandwich	2sm/Hg piece 4oz or 1 sand 4oz	000 222	00000C 88888) 	000 888
Spaghetti, lasagna, other pasta with tomato sauce	I cup	888	28888	555 500	800
Hot dogs Ham, lunch meats Vegetable soup, vegetable beef, minestrone, tomato soup	2 dogs 2 ब्रीices 1 med. bowl	888		388	888
MEAT, LUNCH ITEMS EAT THAN SEVEN TIMES A DA 1		S M L	NUMBER OF 8 9 10 11 12 13		R DAY: 16 17 18 19
BREAKFAST FOODS High fiber, bran or granola cereals, shredded wheat	l med. bowl	$\stackrel{S M L}{\bigcirc \bigcirc \bigcirc}$	none 1 $\stackrel{2}{\bigcirc}$ $\stackrel{3}{\bigcirc}$ $\stackrel{4}{\bigcirc}$ $\stackrel{5}{\bigcirc}$	$\begin{array}{c} & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ \end{array}$	day week month
Highly fortified cereals, such as Product 19, Total or Most		000	000000		000
Other cold cereals, such as Corn Flakes, Rice Krispies Cooked cereals	I med. bowl	000))) (
Bacon Sausage	2 slices 2 patties/link	888	88888	388	888
BREAKFAST FOODS EATH THAN SEVEN TIMES A DA 34	\Y 	\$ M L	NUMBER OF 8 9 10 11 12 1		R DAY: 16 17 18 19
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	4 4 4 19		Page 8	J****\	4795 (\$\tilde{\epsilon}\$)

SURVEY NETWORK™

		Postr	partum (1)	20 10 10 10 10 10 10 10 10 10 10 10 10 10
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
BREADS, SALTY SNACKS SPREADS White bread (including sandwiches), bagels, etc., crackers Dark bread, including whole wheat, rye, pumpernickel Corn bread, corn muffins, corn tortillas Salty snacks (chips, popcorn, etc.) Peanuts, peanut butter Magarine on bread or rolls	2 slices, 3		none 1 2 3 4 5 6 7 00000000000000000000000000000000000	day week month
Butter on bread or rolls	2 pats	888	8888888	888
BREADS, ETC. EATEN MOTHAN SEVEN TIMES A DATE of the seven times and the seven times and the seven times are seven times as the seven times are seven		s M L	NUMBER OF TIMES PE 8 9 10 11 12 13 14 15	16 17 18 19
SWEETS Ice cream Doughnuts, cookies, cakes, pastry Pies Chocolate candy	I scoop 1pc or 3 cook 1 med. slice sm bar / Ioz	s M L 888 888	none 1 2 3 4 5 6 7 88888888888888888888888888888888888	day week month
SWEETS EATEN MORE THAN SEVEN TIMES A DA 56_	AY	s M L 888	NUMBER OF TIMES PER 8 9 10 11 12 13 14 15	R DAY: 16 17 18 19



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SURVEY NETWORK

Postpartum (1)

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
DAIRY PRODUCTS, BEVERAGES		S M L	none 1 2 3 4 5 6 7	day week month
Cheeses and cheese spreads.	2 slices or	ŎÖŌ		
not including cottage cheese	2oz			
Whole milk and beverages with		$\bigcirc\bigcirc\bigcirc$		
whole milk (not incl. on cereal)				
2% milk and beverages with 2%	80z glass	$\circ\circ$		$\bigcirc\bigcirc\bigcirc$
milk (not including on cereal)				
Skim milk, 1% milk or butter-	80z glass	$\bigcirc \bigcirc \bigcirc$	00000000	$\mathcal{O}\mathcal{O}$
milk (not including on cereal)				
Regular soft drinks (not diet)	12oz can	$\bigcirc\bigcirc\bigcirc$		$\mathcal{Q}\mathcal{Q}$
Beer	12oz can	QQQ	QQQQQQQQQ	$\mathcal{A}\mathcal{Q}\mathcal{Q}$
Wine	l med. glass	QQQ		$\mathcal{A}\mathcal{Q}\mathcal{Q}$
Liquor	1 shot 1 Tablespoor	QQQ	QQQQQQQQQ	
Milk or cream in coffee or tea	1	QQQ		$\mathcal{A}\mathcal{A}\mathcal{A}$
Sugar in coffee or tea, or	2 teaspoon	$\bigcirc \bigcirc \bigcirc$	OOOOOOO	
on cereal	¥			
DAIRY, BEVERAGES EATEN MORE			NUMBER OF TIMES PER	DAY:
THAN SEVEN TIMES A DAY		S M L	8 9 10 11 12 13 14 15	16 17 18 19
1		000	0000000	
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Page 10

Postpartum (1)
The following questions are about your eating habits during your CURRENT pregnancy.
19. How often do you eat the skin on chicken? Seldom/Never Sometimes Often/Always
How often do you eat the fat on meat? Seldom/Never Sometimes Often/Always
How often do you add salt to your food? Seldom/Never Sometimes Often/Always
How often do you add pepper to your food? Seldom/Never Sometimes Often/Always
20. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week
VEGETABLES OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
21. Not counting juices, about how many pieces of fruit do you eat per day or per week? none 1 2 3 4 5 6 7 8 9 per DAY or WEEK FRUITS
22. Please indicate how often you took IRON PILLS during each month of your pregnancy. Please fill in one oval for each month.
Everyday Most Days Occasionally Rarely Never (7 days/week) (5-6 days/week) (3-4 days/week) (1-2 days/week) (0 days/week)
Month 1 Month 2 Month 3 Month 4 Month 5 Month 6 Month 7 Month 8 Month 9

7290

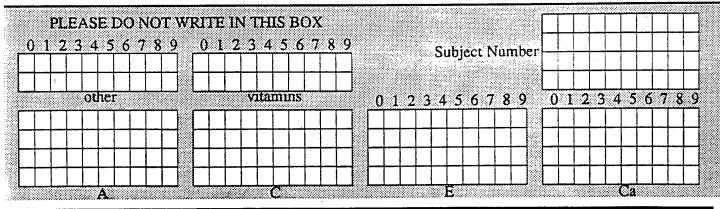
SURVEY NETWORK™

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

Other:

Beta-Carotene

Please list the brand and type of multiple vitamin/mineral you usually take: _



Page 12

9953

SURVEY NETWORK™

Post-partum 2

	Post Partum Sold	iers and Family	Members		O
Subject Number:		iers and Fanniy	_	ate:	
This questionnaire is similar activity level and health hab survey, please ask for help f fill in the ovals. Thank you	its. It will take abour the person who	ıt 20 - 30 minutes	s. If you have ar	iy questions a	bout this
	PHYSICAL ACT	TVITIES AND	SPORTS		
1. A few activities are listed to under YES or NO for each indicate the average number EACH WEEK since you determined to the second sec	activity for EACH ver of days per week	WEEK since you	delivered your	oaby. Then g	o back and
NO YES	WEEK 1		DAYS PER V	VEEK 5 6 7	MINUTES PER DAY
Walking Jog/Run	g (free weights, naut	ilus. etc.)	388		
	ibility) exercises or sports (list up to 2); ()			
88			2225	388	
NO YES	WEEK 2	1	DAYS PER V	VEEK 5 6 7	MINUTES PER DAY
Walking Jog/Run Strength training Stretching (flee	ng (free weights, nau kibility) exercises	\bigcirc		388	<u> </u>
Other exercise	or sports (list up to 2	2):	8888	388	
NO YES	WEEK 3	1	DAYS PER V	VEEK 5 6 7	MINUTES PER DAY
Walking Jog/Run Strength trainin	ng (free weights, nau kibility) exercises	tilus, etc.)		388 388	
Other exercise	or sports (list up to 2	2):	888	388	·
subject number 0 1 2 3 4 5 6	7 8 9 0 1 2	PLEASE DO 1 day 3 4 5 6 7 8 9	NOT WRITE IN	THIS BOX month 3 4 5 6 7	

Page 1

		-partum 2	,	Q
1 (continued).	WEEK 4		DAYS PER WEEK	PER DAY
NO YES	Walking	$\bigcap_{i=1}^{n} C_i$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$)
\mathcal{A}	Jog/Run	\sim	SOOOOC	
QQ .	Strength training (free weights.	nautilus, etc.)		 _
$\bigcirc\bigcirc$	Stretching (flex:bility) exercise			<i>)</i>
$\bigcirc\bigcirc$	Other exercise or sports (list up	(10 2):)
8			3000C	5
			DAMO DED MEEN	ATAIT ITTEC
NO YES	WEEK 5	1	DAYS PER WEEK 2 3 4 5 6 7	MINUTES PER DAY
\bigcirc	Walking	Ō)
QQ.	Jog/Run	Q	2222	<u> </u>
\mathcal{A}	Strength training (free weights. Stretching (flexibility) exercise	· · · · · · · · · · · · · · · · · · ·		}
	Other exercise or sports (list up			/
QQ	•)
\circ	<u> </u>)
	,		DAYS PER WEEK	MINUTES
NO YES	WEEK 6	1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	PER DAY
$\mathcal{A}\mathcal{A}$	Walking Jog/Run	\simeq	AAAAAA	{
$\mathcal{C}_{\mathcal{C}}}}}}}}}}$	Strength training (free weights)	, nautilus, etc.)	777777	5
OO.	Stretching (flexibility) exercise	·s (DOOOOC)
\bigcirc	Other exercise or sports (list up	o to 2):		`
88			2888288	5
2 4	limb control	ONO O	YES	
2. Are you co	urrently using birth control?	\bigcirc NO	1123	
If YES, wh	nat method or type are you using	?		
3. What perc	entage of your baby's feedings a	re breast milk?		
••••	omiga to your endy a second	No breast milk		
		25% breast milk		
		50% breast milk		•
		75% breast milk 100% breast milk		
				roost mille?
4. How man	y weeks after birth did your baby	y begin to regularly eat 10		least mink?
ì	Number of weeks after birth			
	2 a		PLEASE DO NO WRITE IN THIS B	
	0	123456789	WELL III THOD	
	in the state of th	Page 2	6548	

DIET HISTORY AND HEALTH HABITS

5. Are you on a special diet? Please fill in no more than two ovals.

No Weight Loss Weight Gain Low Fat Vegetarian High Protein

High Carbohydrate
Low Cholesterol
Low Salt

6. The following section is about your eating habits since you DELIVERED your baby. Thinking back over the past six weeks, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
Cantaloupe (in season) Grapefruit Hamburger, Cheeseburger, Meat Loaf	1/4 medium (1/2) 1/2 cup 1 medium	S M L	none 1 2 3 4 5 6 7	day week month
Winter Squash, Baked Squash		000	0000000	000

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you are apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you are something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you are the item.

Page 3

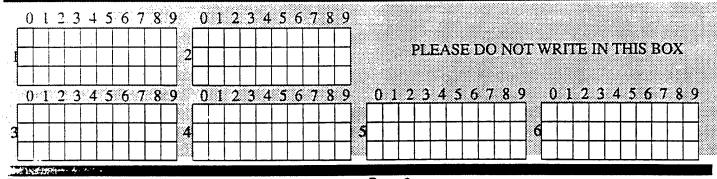
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
FRUITS, VEGETABLES		S M L	none 1 2 3 4 5 6 7	day week month
Apples, applesauce, pears	(1) or 1/2 cup			$\bigcirc\bigcirc\bigcirc$
Cantaloupe (in season)	1/4 medium	\bowtie	XXXXXXXX	AAA
Oranges	1 medium	\bowtie	XXXXXXXX	$\mathcal{Z}\mathcal{Z}\mathcal{Z}$
Orange juice or	60z glass	\bowtie	AAAAAAAAA	BBB
grapefruit juice)))
Grapefruit	(1/2)	\bigcirc	0000000	
Other fruit juices, fortified	60z glass	BBB		CCC
fruit drinks)		
Beans such as, baked beans,	3/4 cup	$\bigcirc\bigcirc\bigcirc$	0000000	
pintos, kidney, limas or in Chil				
Tomatoes, tomato juice	(1) or 60z	$\bigcirc\bigcirc\bigcirc$	000000	
Broccoli	1/2 cup	000	0000000	
Spinach	1/2 cup	000	0000000	OOO
Mustard greens, turnip greens,	1/2 cup	$\bigcirc\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
collards				
Cole slaw, cabbage, sauerkraut		000	0000000	QQQ
Carrots or mixed vegetables	1/2 cup	000		$\bigcirc\bigcirc\bigcirc$
containing carrots				
Green salad	I med, bowl	$\bigcirc\bigcirc\bigcirc$	QQQQQQQQ	QQQ
Salad dressing, mayonnaise	2 Tablespoon	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcirc\bigcirc\bigcirc$
(including on sandwiches)				
French fries and fried potatoes		QQQ	QQQQQQQQ	QQQ
Sweet potatoes, yams	1/2 cup	QQQ	RUUUUUU	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$
Other potatoes, incl. builed,	(1) or 1/2 cup	$\cup \cup \cup$	$\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}$	OOO
baked, potato salad, mashed	3/4 cup			
Rice	374 cup	$\mathcal{O}\mathcal{O}\mathcal{O}$	0000000	000
FRUITS, VEGETABLES EA	ATEN MORE		NUMBER OF TIMES PE	R DAY:
THAN SEVEN TIMES A DA		S M I	8 9 10 11 12 13 14 15	
I		S M L	$\red \red \red \red \red \red \red \red \red$	ÖÖÖÖ.
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3		\bowtie	KXXXXXXX	XXXX
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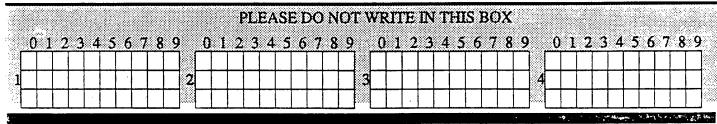
POSC-PATCUIII 2				
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
MEAT, LUNCH ITEMS Hamburgers, cheeseburgers, meat loaf Beef - steaks, roasts	1 medium		none 1 2 3 4 5 6 7	day week month
Beef stew or pot pie with carrots, other vegetables Liver, including chicken livers	1 сир 4oz	000	0000000	000
Pork, including chops, roasts Fried chicken Chicken or turkey, roasted,	4oz (2 chops) 2sm/11g piece 2sm/11g piece	BBB		888
stewed or broiled Fried fish or fish sandwich Other fish, broiled, baked	4oz or 1 sand	999	222222	222
Spaghetti, lasagna, other pasta with tomato sauce Hot dogs	I cup 2 dogs	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	2222222 200000000000000000000000000000	
Ham, lunch meats Vegetable soup, vegetable beet, minestrone, tomato soup	2 stices 1 med. bowl	888	8888888	888
MEAT, LUNCH ITEMS EAT THAN SEVEN TIMES A DA		S M L	NUMBER OF TIMES PER 8 9 10 11 12 13 14 15	R DAY:
2	<u></u>	888	88888888	8888
BREAKFAST FOODS High fiber, bran or granola cereals, shredded wheat	l med. bowl	S M L	none 1 2 3 4 5 6 7	day week month
Highly fortified cereals, such as Product 19. Total or Most Other cold cereals, such as Corn Flakes, Rice Krispies	I med. bowl	000	00000000	
Cooked cereals Eggs (1 egg = smalf serv) Bacon Sausage	1 med, bowl 2 eggs 2 slices 2 patties/links			
BREAKFAST FOODS EATH THAN SEVEN TIMES A DA	N MORE	s M L	NUMBER OF TIMES PE 8 9 10 11 12 13 14 15	R DAY: 16 17 18 19 1
0 1 2 3 4 5 6 7 8		1	OT WRITE IN THIS BOX 9 0 1 2 3 4 5 6 7 8 9 0 1 2	3 4 5 6 7 8 9
			Page 5	4795

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Post-partum 2				
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
BREADS, SALTY SNACKS SPREADS	-	S M I	none 1 2 3 4 5 6 7	day week month
White bread (including sand-	1	$\bigcap^{S}\bigcap^{M}\bigcap^{L}$		000
wiches), bagels, etc., crackers	1			
Dark bread, including whole wheat, rye, pumpernickel	2 slices	000	0000000	
Corn bread, corn muffins.	1 med. piece	$\bigcirc\bigcirc$	0000000	
corn tortillas		$\circ \circ \circ$		
Salty snacks (chips, popcorn, etc.)	2 handfuls	000	0000000	
Peanuts, peanut butter	2 Tablespoon	$\bigcirc\bigcirc\bigcirc$	0000000	
Magarine on bread or rolls	2 pats	\bowtie	XXXXXXXX	$\mathbf{A}\mathbf{A}\mathbf{A}$
Butter on bread or rolls	2 pats	ひひひ	00000000000000000000000000000000000000	000 000
BREADS, ETC. EATEN MORE			NUMBER OF TIMES PE	R DAY:
THAN SEVEN TIMES A DA	ΛY	S M L	8 9 10 11 12 13 14 15	16 17 18 19
. 1	-	000	0000000	
2		QQQ	QQQQQQQQ	QQQQ
4		$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$		
		000	0000000	0000
SWEETS		S M L	none 1 2 3 4 5 6 7	day week month
Ice cream . 4**	1 scoop	000	0000000	
Doughnuts, cookies, cakes, pastry	Ipc or 3 cook	000	0000000	000
	I med. slice	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcap\bigcap$
Chocolate candy	sm bar / Ioz	SSS	00000000000000000000000000000000000000	000
SWEETS EATEN MORE			NUMBER OF TIMES PER	R DAY:
THAN SEVEN TIMES A DAY		S M L		
5 <u></u>		ŎÖŌ	hó ng	0000
6		$\nabla\nabla\nabla$	00000000000000000000000000000000000000	0000



		102	c partuit 2
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES: PER:
DAIRY PRODUCTS, BEVERAGES		S M L	none 1 2 3 4 5 6 7 day week month
Cheeses and cheese spreads, not including cottage cheese	2 slices or 2oz	ŎÖŌ	
Whole milk and beverages with whole milk (not incl. on cereal)		000	000000000
2% milk and beverages with 2% milk (not including on cereal)	***************************************	000	000000000
Skim milk, 1% milk or butter- milk (not including on cereal)	80z glass	000	000000000
Regular soft drinks (not diet) Beer	12oz can 12oz can	222	22222222
Wine Liquor	l med. glass 1 shot	ZZZ	
Milk or cream in coffee or tea	1 Tablespoon 2 teaspoon		
Sugar in coffee or tea, or on cereal	z uzaspoon	000	0000000000
DAIRY, BEVERAGES EATI THAN SEVEN TIMES A DA			NUMBER OF TIMES PER DAY:
1		$\bigcirc^{S}\bigcirc^{M}\bigcirc^{L}$	$ \bigcirc \bigcirc$
3 4, 200	<u>. </u>	888	8888888888
4		000	0000000000



Post-partum 2

The following questions are about your eating habits since you DELIVERED your baby.

7.	How often do you eat the skin on chicken?	Seldom/Never (Sometimes	Often/Always
	How often do you eat the fat on meat?	Seldom/Never (Sometimes	Often/Always
	How often do you add salt to your food?	Seldom/Never (Sometimes	Often/Always
	How often do you add pepper to your food?	Seldom/Never	Sometimes	Often/Always

8. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

9. Not counting juices, about how many pieces of fruit do you eat per day or per week?

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK
FRUITS

Page 8

10. Since you DELIVERED your b	baby, have you taken any vitamins or minerals?	C
○ NO	YES, fairly regularly YES, but not regul	arly If YES:
If YES, please indicate the type and	d number of pills per Day or Week.	
Multiple Vitamin Pills Other Vitamin/Mineral Pills Vitamin A Vitamin C Vitamin E Calcium or dolomite Iron Folate (B6)	ne 1 2 3 4 5 6 7 8+ Day ne 1 2 3 4 5 6 7 8+ Day ne 1 2 3 4 5 6 7 8+ Day	Week Week
Vitamin A Vitamin C Vitamin E		ou take.
	other:	
Please take a moment to fill in an out this information.	ny questions you may have skipped. Thank you for ta	king the time to fill
PLEASE DO NOT WRITE IN 0 1 2 3 4 5 6 7 8 9 0 1 2 Other	3 4 5 6 7 8 9 Subject Number	2 3 4 5 6 7 8 9
A	C	Ca
	Page 9	9963

	Post-partum 3	
	Post Partum Soldiers and Family Members	
	Subject Number:	Date:
	This questionnaire is similar to the one you answered last time. It will ask you activity level and health habits. It will take about 20 - 30 minutes. If you have survey, please ask for help from the person who gave this survey to you. Please fill in the ovals. Thank you. EXERCISE IN WHICH YOU PARTICIPATED	any questions about this
	DURING THE LAST THREE MONTHS	
1.	A few activities are listed below for the last THREE MONTHS since you fille questionnaire. Please fill in an oval under YES or NO for each activity for EA back and indicate the average number of days per week and the minutes per da for EACH MONTH.	CH MONTH. Then go
	NO YES 3 MONTHS AGO AVERAGE DAYS 1 2 3 4	PER WEEK MINUTES 5 6 7 PER DAY
	Walking Jeg/Run Strength training (free weights, nautilus, etc.)	
	Other exercise or sports (list up to 2):	388
	8888	388 =
	NO YES 2 MONTHS AGO Walking Jog/Run Strength training (free weights, nautilus, etc.) Stretching (flexibility) exercises	PER WEEK MINUTES 5 6 7 PER DAY
	Other exercise or sports (list up to 2):	388
	NO YES LAST MONTH Walking Jog/Run Strength training (free weights, nautilus, etc.) Stretching (flexibility) exercises Other exercise or sports (list up to 2):	PER WEEK MINUTES 5 6 7 PER DAY
*****	8888	388
	PLEASE DO NOT WRITE IN day 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9	THIS BOX month 3 4 5 6 7 8 9
)	Page 1	1442

•	Post-partu	n 3	
2. Are you currently using birth control?	○ NO	YES	
If YES, what method or type are you usin	ıg?		
3. What parcentage of your baby's feedings	are breast milk	?	_
	No brea 25% bre 50% bre 75% bre		
4. How many weeks after birth did your bab	y begin eating t	food or formula oth	er than breast milk?
Nu 5. Have you donated blood in the last six mo	mber of weeks onths?	after birth	4 a 0 1 2 3 4 5 6 7 8 9
	○ NO	YES	V 4 4 3 4 3 0 1 8 3
If YES, How many months ago was it?	$\bigcirc^{1}\bigcirc^{2}\bigcirc^{3}$	4 5 6	
6. How many months after you delivered you you have not yet menstruated.)	ur baby did you	r menstrual period	begin? Please indicate 0 if
	0 1 2	3 4 5 6	
7. What day and month did your last period s have not menstruated since delivering you	start? (Please in r baby.)	dicate 0 if you	2 a
	_ day/month		0123456789 day
8. For each month since you delivered your b of times you started a menstrual period. Pl month.	paby, please indi lease fill in one 0 1 2	cate the number oval for each	0 1 2 3 4 5 6 7 8 9 month
Month 1 Month 2 Month 3 Month 4 Month 5 Month 6			0 1 2 3 4 5 6 7 8 9 days
9. How many days were between the start of since delivering your baby.)days	your last two pe	riods? (Put a 0 if y	ou have not menstruated
en e			
)	Page 2		8742

DIET HISTORY AND HEALTH HABITS

10. <i>A</i>	Are you	on a spe	ecial diet?	Please	fill i	n no	more	than	two oval	le
--------------	---------	----------	-------------	--------	--------	------	------	------	----------	----

○ No	OLow Fat	High Carbohydrate
Weight Loss	Vegetarian	Low Cholesterol
Weight Gain	High Protein	Low Salt

11. The following section is about your eating habits for the last SIX MONTHS. Thinking back over the past six months, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

rin Number 15020-5-72

•	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
Cantaloupe (in season) Grapefruit Hamburger, Cheeseburger, Meat Loaf	1/4 medium (1/2) 1/2 cup 1 medium	S M L	none 1 2 3 4 5 6 7	day week month
Winter Squash, Baked Squash	1/2 cup	000	●0000000	000

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you are apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you are something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you are the item.

ate the item.

Page 3

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
FRUITS, VEGETABLES		S M L	none 1 2 3 4 5 6 7	da
Apples, applesauce, pears	(1) or 1/2 cup			day week month
Cantaloupe (in season)	1/4 medium	$\succ \leftarrow \succ \leftarrow$	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$	$\mathcal{A}\mathcal{A}\mathcal{A}$
Oranges	l medium	\bowtie	\mathcal{C}	$\mathcal{H}\mathcal{H}\mathcal{H}$
Orange juice or	60z glass	\bowtie	YYYYYYY	$\mathcal{A}\mathcal{A}\mathcal{A}$
grapefruit juice			0000000	$\mathcal{O}\mathcal{O}\mathcal{O}$
Grapefruit	(1/2)	$\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
Other fruit juices, fortified	60z glass	\bowtie	XXXXXXXX	$\mathcal{A}\mathcal{A}\mathcal{A}$
fruit drinks		-		
Beans such as, baked beans,	3/4 cup	$\bigcirc\bigcirc\bigcirc$		$\bigcirc\bigcirc\bigcirc$
pintos, kidney, limas or in Chil		-		
Tomatoes, tomato juice	(1) or 60z	$\bigcirc\bigcirc\bigcirc$	00000000	$\cap \cap \cap$
Broccoli	1/2 cup	BBB	XXXXXXXXX	\times
	1/2 cup	\bowtie	XXXXXXXX	H
Mustard greens, turnip greens,	1/2 cup	argmax	TTTTTTT	\times
collards		-		
Cole siaw, cabbage, sauerkraut		$\bigcirc\bigcirc\bigcirc$		$\cap \cap \cap$
Carrots or mixed vegetables	1/2 cup	abla a b a b a b a b a b a b a b a b a b		\times
containing carrots				
	I med, bowl			$\bigcap\bigcap\bigcap$
	2 Tablespoon			\times
(including on sandwiches)	-	· · · ·		
French fries and fried potatoes			00000000k	$\bigcirc\bigcirc\bigcirc$
Sweet potatoes, yams	1/2 cup			\mathcal{I}
4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 -	(1) or 1/2 cup		00000000	300
baketl potato salad, mashed	2/4			
Rice	3/4 cup		0000000k	
FRUITS, VEGETABLES EA	TEN MORE		NUMBER OF TIMES PER	DAV
THAN SEVEN TIMES A DA	Y	S M .		
1		S M L	8 9 10 11 12 13 14 15	16 17 18 19
2		$rac{1}{2}$	$\times \times $	$\prec \sim \sim \sim$
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		POST	t-partum 3	
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
MEAT, LUNCH ITEMS Hamburgers, cheeseburgers, meat loaf Beef - steaks, roasts	1 medium 4oz		none 1 2 3 4 5 6 7	day week month
Beef stew or pot pie with carrots, other vegetables Liver, including chicken livers	1 cup 4oz	000 000	0000000	000
Fried chicken Chicken or turkey, roasted, stewed or broiled	4oz (2 chops) 2sm/11g piece 2sm/11g piece 4oz or 1 sand			
	4oz 1 cup 2 dogs	388	99999999 0000000	888
Ham, lunch meats Vegetable soup, vegetable beef, minestrone, tomato soup MEAT, LUNCH ITEMS EAT	2 slices 1 fined, bowl	388	<u> </u>	888
THAN SEVEN TIMES A DA	Y (S M L	NUMBER OF TIMES PER 8 9 10 11 12 13 14 15	16 17 18 19
cereals, shredded wheat Highly fortified cereals, such	l med. bowl		none 1 2 3 4 5 6 7	day week month
Corn Flakes, Rice Krispies	l med. bowl		0000000	000 Ó00
Sausage	2 slices 2 patties/links		3888888	888
BREAKFAST FOODS EATE THAN SEVEN TIMES A DA 34		s M L	NUMBER OF TIMES PER 8 9 10 11 12 13 14 15	R DAY: 16 17 18 19 17 18 19
0123456789		EASE DO NO 4 5 6 7 8 9	T WRITE IN THIS BOX 0 1 2 3 4 5 6 7 8 9 0 1 2 3	3 4 5 6 7 8 9
			Page 5	4795

Post-partum 3 **MEDIUM** YOUR SERVING SERVING NUMBER OF TIMES: PER: BREADS, SALTY SNACKS **SPREADS** none 1 day week month White bread (including sand- 2 slices, 3 wiches), bagels, etc., crackers crackers Dark bread, including whole 2 slices wheat, rye, pumpernickel Corn bread, corn muffins, 1 med. piece corn tortillas Salty snacks (chips, 2 handfuls popcorn, etc.) Peanuts, peanut butter 2 Tablespoon Magazine on bread or rolls 2 pats Butter on bread or rolls 2 pats BREADS, ETC. EATEN MORE NUMBER OF TIMES PER DAY: THAN SEVEN TIMES A DAY 16 **SWEETS** none 1 M day week month Tce cream 2, 35 1 scoop Doughnuts, cookies, cakes, Ipc or 3 cook pastry Pies I med, slice Chocolate candy sm bar / loz SWEETS EATEN MORE NUMBER OF TIMES PER DAY: THAN SEVEN TIMES A DAY 12 13 15 M 10 11 14 16 18

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SURVEY NETWORK™

Page 6

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Post-partum 3

		POST-L	artum 3	
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
DAIRY PRODUCTS, BEVERAGES		S M L	none 1 2 3 4 5 6 7	day week month
Cheeses and cheese spreads,	2 slices or	ÕÕÕ		000
not including cottage cheese	2oz			
Whole milk and beverages with		000	0000000	000
whole milk (not incl. on cereal)	*************************			
2% milk and beverages with 2%	80z giass	$\circ\circ$	00000000	$\bigcirc\bigcirc\bigcirc$
milk (not including on cereal) Skim milk, 1% milk or butter-	8oz glass			
milk (not including on cereal)	our guass	$\bigcirc \bigcirc \bigcirc$	00000000	$\cup\cup\cup$
Regular soft drinks (not diet)	12oz can	$\bigcirc\bigcirc$		
Beer	12oz can	\bowtie	XXXXXXXX	\bowtie
Wine	l med. glass	$\sim \sim \sim$		
Liquor	1 shot	ひひひ	CCCCCC	888 B
Milk or cream in coffee or tea	1 Tablespoor	abla abl		$\bigcirc\bigcirc\bigcirc$
Sugar in coffee or tea, or	2 teaspoon	000	0000000	
on cereal	v			
DAIRY, BEVERAGES EAT			NUMBER OF TIMES PE	R DAY:
THAN SEVEN TIMES A DA	ΛY	S M L	8 9 10 11 12 13 14 15	16 17 18 19
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2		QQQ	QQQQQQQQ	QQQQ
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Page 7

The following of	questions are about	your eating hab	its for the last	SIX MONT	HS.
12. How often do you e	at the skin on chick	en Seldom	Never So	ometimes	Often/Always
How often do you eat	the fat on meat?	Seldom/	Never So	metimes	Often/Always
How often do you add	salt to your food?	Seldom/	Never O So	metimes	Often/Always
How often do you add	pepper to your foo	d? Seldom/	Never So	metimes	Often/Always
13. Not counting salad o	r potatoes, about ho	w many servin	gs of vegetable	es do you eat	t per day or per week?
VEGETABLES	$\bigcap^{\text{none}} \bigcap^{1} \bigcirc^{2} \bigcirc^{3}$	$\overset{3}{\bigcirc}\overset{4}{\bigcirc}\overset{5}{\bigcirc}\overset{6}{\bigcirc}$	$\bigcirc \bigcirc $	per DAY	or WEEK
	**		15		
دور معجلة ويطا	•				
14. Not counting juices,	about how many pi	eces of fruit do			
FRUITS	none 1 $\frac{2}{3}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0	9 per DAY	or WEEK

15. Over the last SIX MONTH	S, have you taken any vitamins or minerals?
. ONO	YES, fairly regularly YES, but not regularly If YES:
If YES, please indicate the type	and number of pills per Day or Week.
Multiple Vitamin Pills Other Vitamin/Mineral Pills Vitamin A Vitamin C Vitamin E Calcium or dolomite Iron Folate (B6)	none 1 2 3 4 5 6 7 8+ Day Week none 1 2 3 4 5 6 7 8+ Day Week No
For the Other Vitamins, plea Vitamin A Vitamin C Vitamin E Calcium or dolomite	se indicate below how many milligrams or IUs per pill you take. IU per pill mg per pill IU per pill mg per pill mg per pill

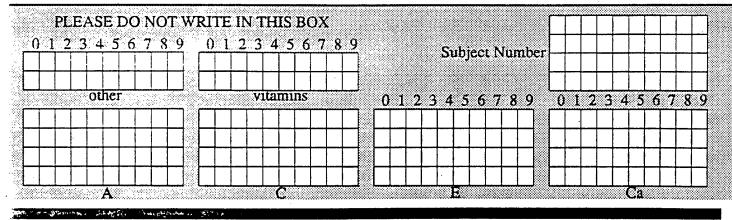
_____ mg per pill

_____ mg per pill

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

Cod Liver Oil

Other:__



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9973

Iron

Folate (B6)

Other Supplements (please fill in all that apply)

Zinc

Beta-Carotene

Please list the brand and type of multiple vitamin/mineral you usually take:

	0	1	2	3	4	5	6	7	8	9		da	ıy						PL	E٨	SI	3 D	O)	NO	T	WI	U)	Έ	ΙN	Τ	HI	SI	30	X		
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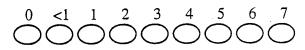
SURVEY NETWORK™

5. What is th	ne highest level of education you have completed?
	Some high school
	High school graduate
	Some college
	College graduate
	Post-graduate study
	Post-graduate degree
6. What is y	our current marital status?
	Married and currently living with spouse
	Married, but unaccompanied
	Legally separated/Divorced
,	Single, not married
	SMOKING HISTORY
7. Did you s	moke 1 or more cigarettes in the last MONTH?
	○ NO
!	YES
	a. Usually, how many days a week do you smoke?
If YES:	b. On those days, about how many cigarettes do you smoke per day?
.	How many years have you been smoking cigarettes? years
8. Did you g	uit smoking within the last year?
	No, I never smoked
	No, I continue to smoke
	No, I quit smoking more than 1 year ago
,	Yes, I quit smoking within the last year
	a. How long ago did you quit smoking cigarettes?
	6 months ago or less (months)
	Greater than 6 months ago (months)
	<1 1 2 3 4 5 6 7 days
If YES:	b. How many days a week did you smoke?
	c. On those days, about how many cigarettes did you smoke per day?
	d. How many years did you smoke cigarettes before you quit? years
0 1 2 3 4	7c quit months 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
7b cig	s per day quit months 8c cigs per day 8d years
<u></u>	Page 2 1612 •

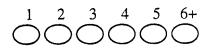
ALCOHOL USE

9. Please indicate the average number of days per week you have AT LEAST ONE alcoholic drink (beer, wine, liquor) and indicate the average number of drinks you drank on those days.

Average number of days per week you have at least one alcoholic drink



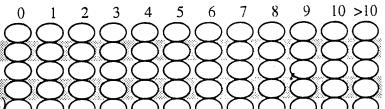
Average number of drinks you drink on those days



PRIOR PREGNANCIES

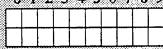
10. Please fill in an oval under the approriate number for each item listed below, as they apply to you.

Pregnancies, including this one
Prior live births
Miscarriages
Living children
Multiple birth pregnancies (twins, triplets, etc.)



PLEASE DO NOT WRITE IN THIS BOX

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11 years

EXERCISE IN WHICH YOU PARTICIPATE

11. A few physical activities are listed below. Read the list and fill in the oval under YES in front of any activities you do. Fill in the oval under NO in front of any activity you do not do. Next, go back to the activities where you filled in the oval under YES and fill in the ovals for the average number of days per week you did the activity and write in the number of minutes per day.

	NO YES Walking Jog/Run Strength training (free weights, Stretching (flexibility) exercise Other exercise or sports (list up	S		DAYS PER 2 3 4 3 4 3 6 3 6 3 6	WEEK 5 6 6 6 6 6 6 6 6 6 6 6 6 6	MINUTES PER DAY
12.	Are you currently using birth control? If YES, what method or type are you using	○ NO	(YES		
13.	Have you donated blood in the last six mo					
	If YES, how many months ago was it?	$\bigcirc NO$ $\stackrel{1}{\bigcirc} \stackrel{2}{\bigcirc} \stackrel{3}{\bigcirc}$	4	5 6		
14.	What day and month did your last period	start?/	da	1y/month		

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Form Number 75020-5-72

DIET HISTORY AND HEALTH HABITS

15. Are you on a special diet? Please fill in no more than two or

No Weight Loss Weight Gain Low Fat
Vegetarian
High Protein

High Carbohydrate
Low Cholesterol
Low Salt

16. The following section is about your usual eating habits. Thinking back over the past month, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
Cantaloupe (in season) Grapefruit Hamburger, Cheeschurger, Meat Loaf Winter Squash, Baked Squash	1/4 medium (1/2) 1/2 cup 1 medium 1/2 cup		none 1 2 3 4 5 6 7	day week month

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you are apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you are something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you are the item.

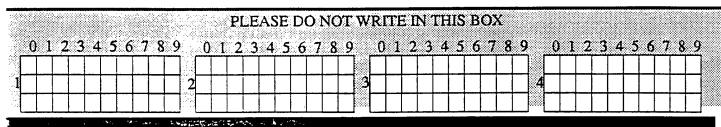
Page 5

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Form Number 75020-5-72

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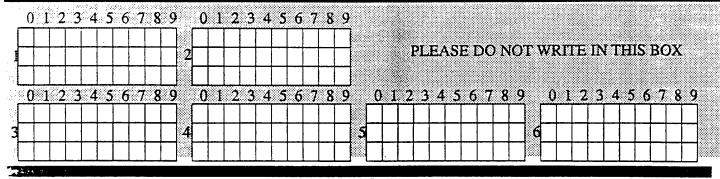
				O
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
FRUITS, VEGETABLES		S M L	none 1 2 3 4 5 6 7	day week month
Apples, applesauce, pears	(1) or 1/2 cup			
Cantaloupe (in season)	1/4 medium	$\bigcirc\bigcirc\bigcirc$		000
Oranges	1 medium			000
Orange juice or grapefruit juice	60z glass	000	0000000	000
Grapefruit	(1/2)	$\bigcirc\bigcirc\bigcirc$		$\bigcirc\bigcirc\bigcirc$
Other fruit juices, fortified	60z glass	BBB		AAA
fruit drinks))
Beans such as, baked beans,	3/4 cup	$\bigcirc\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
pintos, kidney, limas or in Chil	,			
Tomatoes, tomato juice	(1) or 6oz	$\bigcirc\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
Broccoli	1/2 cup	$ abla \mathcal{B} \mathcal{B} $		$\bigcap \bigcap \bigcap$
Spinach	1/2 cup	CCC	BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB	abla a
Mustard greens, turnip greens,	1/2 cup	abla a b a b a b a b a b a b a b a b a b		000
collards	,)))
Cole slaw, cabbage, sauerkraut		000	0000000	000
Carrots or mixed vegetables	1/2 cup	000	0000000	
containing carrots				
Green salad	I med, bowl	$\bigcirc\bigcirc\bigcirc$	0000000	000
Salad dressing, mayonnaise	2 Tablespoon			$\bigcirc\bigcirc\bigcirc$
(including on sandwiches)	<u> </u>	,		
French fries and fried potatoes		$\bigcirc\bigcirc\bigcirc$	0000000	QQQ
Sweet potatoes, yams	1/2 cup	QQQ		QQQ
Other potatoes, incl. boiled,	(1) or 1/2 cup	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcirc\bigcirc\bigcirc$
baked, potato salad, mashed	2/4			
Rice	3/4 cup	$\mathcal{O}\mathcal{O}\mathcal{O}$	$\mathcal{O} \mathcal{O} \mathcal{O} \mathcal{O} \mathcal{O} \mathcal{O} \mathcal{O} \mathcal{O} $	OOO
FRUITS, VEGETABLES EA	TEN MORE		NUMBER OF TIMES PER	R DAY:
THAN SEVEN TIMES A DA		S M L	8 9 10 11 12 13 14 15	16 17 18 19
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2		\bowtie	RXXXXXXX	HHHH
3		\bowtie	KXXXXXXX	KKKK.
4		\bowtie	KXXXXXXX	AAAA
		$\bigcirc \bigcirc \bigcirc$	0000000	$\frac{1}{2}$



	MEDIUM	VOLD	_	O
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
MEAT, LUNCH ITEMS		S M L	none 1 2 3 4 5 6 7	day week month
Hamburgers, cheeseburgers,	I medium	ŎÖŌ		
meat loaf		$ \cup \cup \cup $		$\mathcal{O}\mathcal{O}\mathcal{O}$
Beef - steaks, roasts	40z	$\bigcirc\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
Beef stew or pot pie with	i cup	\bowtie		$\searrow\searrow\searrow$
carrots, other vegetables		$\cup\cup\cup$	0000000	$\cup\cup\cup$
Liver, including chicken	40z		0000000	\sim
livers		$\bigcirc\bigcirc\bigcirc$	OOOOOOO	
Pork, including chops, roasts	4oz (2 chops)			~~~
Fried chicken	2sm/11g piece		YYYYYYY	$\mathcal{Q}\mathcal{Q}\mathcal{Q}$
	2sm/11g piece	N 20 20 2		QQQ
Chicken or turkey, roasted, stewed or broiled	"Sun 11g biece	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcirc\bigcirc\bigcirc$
	ļ,			
Fried fish or fish sandwich	4oz or 1 sand	$\bigcirc\bigcirc\bigcirc$		
Other fish, broiled, baked	4oz	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcirc\bigcirc\bigcirc$
Spaghetti, lasagna, other	I cup			
pasta with tomato sauce				
Hot dogs	2 dogs	$\bigcirc\bigcirc\bigcirc$		$\bigcirc\bigcirc\bigcirc$
Ham, lunch meats	2 slices	\bowtie		H
Vegetable soup, vegetable	1 med. bowl	\Join	XXXXXXXX	H
beef, minestrone, tomato soup				
MEAT, LUNCH ITEMS EAT			NUMBER OF TIMES PER	DAY
THAN SEVEN TIMES A DA	ΥY	S M L	8 9 10 11 12 13 14 15	16 17 18 19
1		ÕÕÕ		
2		$\bowtie \bowtie$	XXXXXXXX	H
BREAKFAST FOODS		S M L	none 1 2 3 4 5 6 7	day week month
High fiber, bran or granola	I med. bowl	ŎÖŎ		
cereals, shredded wheat		\bigcirc	0000000	
Highly fortified cereals, such	1 med, bowl	$\cap \cap \cap$	0	\sim
as Product 19, Total or Most		\bigcirc	0000000	
Other cold cereals, such as	l med. bowl	$\bigcirc\bigcirc\bigcirc$	0	\sim
Com Flakes, Rice Krispies		$\mathcal{V} \mathcal{V} \mathcal{V}$		
Cooked cereals	I med. bowl			
	2 eggs	\nearrow	$\nearrow\!$	$\Rightarrow \Leftrightarrow \Rightarrow \Leftrightarrow$
	2 slices	><>><	アンアンアンファ	H
	2 patties/links	\mathcal{S}	2222222	$\mathcal{A}\mathcal{A}\mathcal{A}$
		$\frac{1}{2}$	0000000	$\frac{1}{2}$
BREAKFAST FOODS EATE			NUMBER OF TIMES PER	
THAN SEVEN TIMES A DA		S M L	8 9 10 11 12 13 14 15	16 17 18 19
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· ·		$\bigcirc\bigcirc\bigcirc$	00000000	
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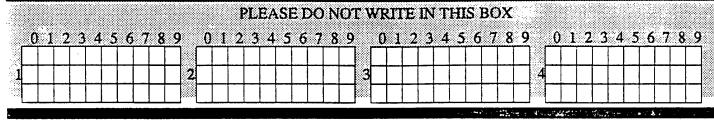
Form Number 75020-5-72

			aton programs 1	
	MEDIUM SERVING		NUMBER OF TIMES:	PER:
BREADS, SALTY SNACKS SPREADS		C M I	more 1 2 2 4 5 6 7	day week month
White bread (including sand-	2 slices, 3	$\bigcap^{S}\bigcap^{M}\bigcap^{L}$	none 1 2 3 4 5 6 7	day week inolidi
wiches), bagels, etc., crackers Dark bread, including whole	1			
wheat, rye, pumpernickel	2 30003	$\bigcirc\bigcirc\bigcirc$	0000000	OOO
Corn bread, corn muffins, corn tortillas	1 med. piece	000	0000000	000
Salty snacks (chips, popcorn, etc.)	2 handfuls	000	0000000	000
Peanuts, peanut butter Magazine on bread or rolls Butter on bread or rolls	2 Tablespoon 2 pats 2 pats			
BREADS, ETC. EATEN MC			NUMBER OF TIMES PE	R DAY:
THAN SEVEN TIMES A DA	ΑY	S M L	8 9 10 11 12 13 14 15	16 17 18 19
<u>1</u>	받	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$	99999999	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$
3				
SWEETS		S M L	none 1 2 3 4 5 6 7	day week month
Tice cream Doughnuts, cookies, cakes,	I scoop Ipc or 3 cook	888	8888888	888
pastry Pies Chocolate candy	I med. slice sm bar / Toz	888	8888888	888
SWEETS EATEN MORE			NUMBER OF TIMES PER	R DAY:
THAN SEVEN TIMES A DA	ΑY	S M L	8 9 10 11 12 13 14 15	16 17 18 19
6		888	88888888	8888
- No		. ,	- was an	



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	•			
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
DAIRY PRODUCTS, BEVERAGES		S M L	none 1 2 3 4 5 6 7	day week month
Cheeses and cheese spreads,	2 slices or	ŎÕÕ		
not including cottage cheese	2oz			
Whole milk and beverages with	8oz glass	$\bigcirc\bigcirc\bigcirc$	0000000	000
whole milk (not incl. on cereal)	***************************************)		
2% milk and beverages with 2%	8oz glass	$\bigcirc\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
milk (not including on cereal)				
	80z glass	000	0000000	
milk (not including on cereal)				
Regular soft drinks (not diet)	12oz can	$\bigcirc\bigcirc\bigcirc$		QQQ
Beer	12oz can	QQQ	QQQQQQQQ	QQQ
Wine	1 med. glass	$\bigcirc\bigcirc\bigcirc$	QQQQQQQQ	QQQ
Liquor	1 shot 1 Tablespoor	QQQ	QQQQQQQQ	QQQ
Milk or cream in coffee or tea	1	QQQ	QQQQQQQQ	QQQ
Sugar in coffee or tea, or on cereal	2 teaspoon	$\bigcirc \bigcirc \bigcirc$	0000000	$\cup\cup\cup$
Officereat				
DAIRY, BEVERAGES EAT	EN MORE		NEW ADED OF THAT OF	D DAY.
THAN SEVEN TIMES A DA		S M L	NUMBER OF TIMES PER 8 9 10 1 12 13 14 15	16 17 18 19
1		S M L		
2		><>><		HHH
3		$\succ \leftarrow \succ \leftarrow$	PYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY	$\times \times \times \times$
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Pane 9

The following questions are about your usual eating habits.

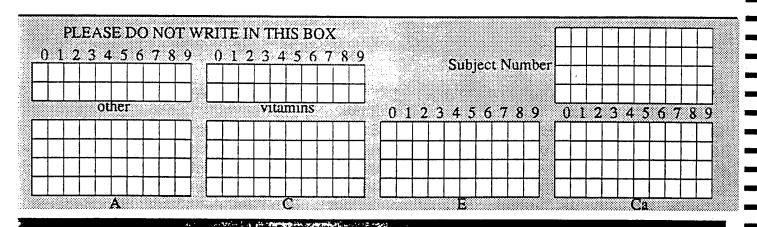
17. How often do you e	eat the skin on chicken?	Seldom/Never (Sometimes	Often/Always
How often do you ea	it the fat on meat? (Seldom/Never	Sometimes	Often/Always
How often do you ac	ld salt to your food? (Seldom/Never	Sometimes	Often/Always
How often do you ac	ld pepper to your food?(Seldom/Never	Sometimes	Often/Always
		. •		
18. Not counting salad	or potatoes, about how r	nany servings of vege	etables do you ea	at per day or per week?
VEGETABLES	$ \begin{array}{c c} \text{none} & 1 & 2 & 3 \\ \hline \end{array} $	⁴ ⁵ ⁶ ⁷	8 9 per DA	Y or WEEK
•	<i>*</i>	,	• Arte	
•				
A STATE OF THE STA	•			
19. Not counting juices	, about how many pieces	of fruit do you eat p	er day or per wee	ek?
FRUITS	none $1 2 3$	$\frac{4}{2}$ $\frac{5}{2}$ $\frac{6}{2}$ $\frac{7}{2}$	9 per DA	Y or WEEK

Page 10

20.	Do	you	take	any	vitamins	or	minerals?
-----	----	-----	------	-----	----------	----	-----------

Оио	YES, fairly regularly YES, but not regularly If YES:						
If YES, please indicate the type and number of pills per Day or Week.							
Multiple Vitamin Pills Other Vitamin/Mineral Pills Vitamin A Vitamin C Vitamin E Calcium or dolomite Iron Folate (B6)	none 1 2 3 4 5 6 7 8+ Day Week none 1 2 3 4 5 6 7 8+ Day Week None 1 2 3 4 5 6 7 8+ Day Week						
For the Other Vitamins, ple	ase indicate below how many milligrams or IUs per pill you take.						
Vitamin A	IU per pill						
Vitamin C Vitamin E	mg per pill						
Calcium or dolomite	IU per pill mg per pill						
Iron Folate (B6)	mg per pill mg per pill						
Other Supplements (please fill Yeast Selenium	in all that apply) Zinc Cod Liver Oil Beta-Carotene Other:						
Please list the brand and type of multiple vitamin/mineral you usually take:							

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.



Page 11

	PLEASE DO NOT WRITE I	N THIS BOX
subject number	——————————————————————————————————————	
	day	month
0 1 2 3 4 5 6 7	<u> </u>	
2 a	0 1 2 3 4 5 6 7 8 ° day	0 1 2 3 4 5 6 7 8 9 month

620

Form Number 75020-5-72

DIET HISTORY AND HEALTH HABITS

5	Are v	ou on	a special	dieta	Please fill	l in no	more	than	two ovale
J.	ALC y	ou on	a special	uict:	ricase III	i in no	more	man i	two ovais.

No Weight Loss Weight Gain Low Fat Vegetarian High Protein High Carbohydrate
Low Cholesterol
Low Salt

6. The following section is about your usual eating habits. Thinking back over the past month, indicate how often you are the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none" Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	NUMBER OF TIMES:	PER:
Cantaloupe (in season) Grapefruit Hamburger, Cheeseburger, Meat Loaf Winter Squash, Baked Squash	1/4 medium (1/2) 1/2 cup 1 medium 1/2 cup	none 1 2 3 4 5 6 7	day week month

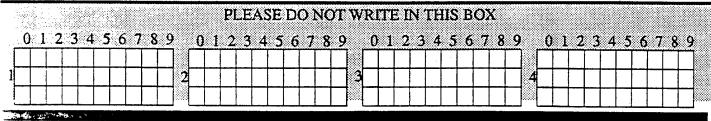
Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you are apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you are something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you are the item.

P 261: 24:

Page 2

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
FRUITS, VEGETABLES		S M L	none 1 2 3 4 5 6 7	day week month
Apples, applesauce, pears	(1) or 1/2 cup			
Cantaloupe (in season)	1/4 medium	\bowtie	XXXXXXXX	\bowtie
Oranges	1 medium	ZZZ		
Orange juice or	60z glass	AAA		BBB
grapefruit juice))		\mathcal{O}
Grapefruit	(1/2)	$\bigcirc\bigcirc\bigcirc$		$\bigcirc\bigcirc\bigcirc$
Other fruit juices, fortified	60z glass	000	0000000	OOO
fruit drinks				
Beans such as, baked beans,	3/4 cup	$\bigcirc\bigcirc\bigcirc$	0000000	
pintos, kidney, limas or in Chil	1 9		·	
Tomatoes, tomato juice Broccoli	(1) or 6oz 1/2 cup	QQQ		QQQ
Spinach	1/2 cup 1/2 cup	$\mathcal{Q}\mathcal{Q}\mathcal{Q}$		QQQ
Mustard greens, turnip greens,	1/2 cup	$\mathcal{H}\mathcal{H}\mathcal{H}$	YYYYYYY	
collards	172 cap	OOO		
Cole slaw, cabbage, sauerkraut	1/2cup	$\bigcirc\bigcirc\bigcirc$		
Carrots or mixed vegetables	1/2 cup	\bowtie	YYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY	
containing carrots		\bigcirc		
Green salad	I med, bowl	$\bigcirc\bigcirc\bigcirc$	00000000	
Salad dressing, mayonnaise	2 Tablespoon	\bowtie	MAXXXXXXX	XXX :
(including on sandwiches).				
French fries and fried potatoes		$\bigcirc\bigcirc\bigcirc$		$\bigcirc\bigcirc\bigcirc$
Sweet potatoes, yams	1/2 cup	000		
Other potatoes, incl. builed,	(1) or 1/2 cup			000 ·
baked, potato salad, mashed	214			'
Rice	3/4 cup	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcirc\bigcirc\bigcirc$
FRUITS, VEGETABLES EA	TEN MORE	**************************************	NUMBER OF TIMES PER	DAY:
THAN SEVEN TIMES A DA		S M L		16 17 18 19
1		S M L		
2		\bowtie	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	$\times \times \times :$
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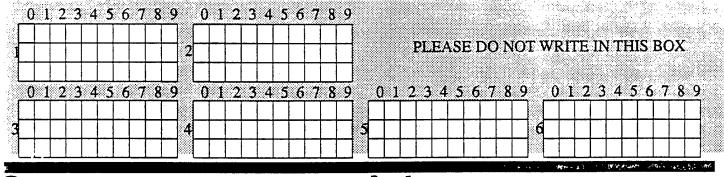


	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
MEAT, LUNCH ITEMS Hamburgers, cheeseburgers, meat loaf Beef - steaks, roasts	I medium 4oz	\$ M L	none 1 2 3 4 5 6 7	day week month
Beef stew or pot pie with carrots, other vegetables Liver, including chicken	1 cup 4oz	000	0000000	000
Fried chicken	4oz (2 chops) 2sm/11g piece	888	8888888	888
Chicken or turkey, roasted, stewed or broiled	2sm/11g piece		000000	000
Fried fish or fish sandwich Other fish, broiled, baked Spaghetti, lasagna, other pasta with tomato sauce	4oz or 1 sand 4oz 1 cup			
Hot dogs Ham, lunch meats Vegetable soup, vegetable beef, minestrone, tomato soup	2 dogs 2 glices 1 med, bowl			
MEAT, LUNCH ITEMS EAT THAN SEVEN TIMES A DA		S M L	NUMBER OF TIMES PER 8 9 10 11 12 13 14 15	R DAY: 16 17 18 19
1		888	888888	8888
BREAKFAST FOODS High fiber, bran or granola cereals, shredded wheat Highly fortified cereals, such	1 med. bowl	$ \begin{array}{c c} S & M & L \\ \hline \end{array} $	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	day week month
as Product 19, Total or Most Other cold cereals, such as Corn Flakes, Rice Krispies	1 med. bowl		0000000	000
Cooked cereals Eggs (1 egg = small serv) Bacon Sausage	1 med, bowl 2 eggs 2 slices 2 patties/links			
BREAKFAST FOODS EATE THAN SEVEN TIMES A DA 3		S M L	NUMBER OF TIMES PER 8 9 10 11 12 13 14 15	R DAY: 16 17 18 19 C C C C C C C C C C C C C C C C C C C
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SURVEY NETWORK

Form Number 75020-5-72

Non-pregnant 2				
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
BREADS, SALTY SNACKS SPREADS	3.	S M L	none 1 2 3 4 5 6 7	day week month
White bread (including sand-	1 ' 1	ŎÖŌ		000
wiches), bagels, etc., crackers Dark bread, including whole				
wheat, rye, pumpernickel	2 0.000		0000000	
Corn bread, corn muffins,	1 med. piece	000	0000000	
corn tortillas	4	~ ~ ~		
Salty snacks (chips, popcom, etc.)	2 handfuls	$\bigcirc\bigcirc\bigcirc$	0000000	000
Peanuts, peanut butter	2 Tablespoon	QQQ		
Magarine on bread or rolls Butter on bread or rolls	2 pats 2 pats	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$	QQQQQQQQ	$\mathcal{Q}\mathcal{Q}\mathcal{Q}$
Dutter our oreas or rolls	2 paus	$\frac{1}{2}$	00000000	
BREADS, ETC. EATEN MO			NUMBER OF TIMES PE	R DAY:
THAN SEVEN TIMES A DA	ΑΥ	S M L	8 9 10 11 12 13 14 15	16 17 18 19
!	Y	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$	QQQQQQQQ	$\mathcal{Q}\mathcal{Q}\mathcal{Q}\mathcal{Q}$
3	*	HHH		HHHHH
4		888	00000000000000000000000000000000000000	2222
SWEETS		S M L	none 1 2 3 4 5 6 7	day week month
Ice cream	1 scoop	QQQ		QQQ
Doughnuts, cookies, cakes, pastry	lpc or 3 cook	000	00000000	000
Pies	I med, slice	$\bigcirc\bigcirc\bigcirc$	00000000	000
Chocolate candy	sm bar/loz	OOO	0000000	
SWEETS EATEN MORE			NUMBER OF TIMES PER	R DAY:
THAN SEVEN TIMES A DA	AY	S M L	8 9 10 11 12 13 14 15	16 17 18 19
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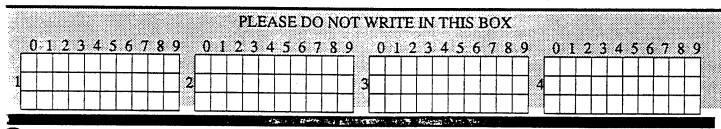
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SURVEY NETWORK™

Form Number 75020-6-72

Non-pregnant 2

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
DAIRY PRODUCTS, BEVERAGES		S M L	none 1 2 3 4 5 6 7	day week month
Cheeses and cheese spreads,	2 slices or			Cay week monu
not including cottage cheese	2oz			$\bigcirc\bigcirc\bigcirc$
Whole milk and beverages with whole milk (not incl. on cereal)		000	0000000	000
2% milk and beverages with 2%		$\bigcirc\bigcirc\bigcirc$		$\bigcirc\bigcirc\bigcirc$
milk (not including on cereal)		\bigcirc		
Skim milk, 1% milk or butter- milk (not including on cereal)	80z glass	000	0000000	000
Regular soft drinks (not diet)	12oz can	$\bigcirc\bigcirc\bigcirc$		$\bigcirc\bigcirc\bigcirc$
Beer	12oz can	BBB	888888888	H
Wine	l med. glass	abla abl	000000000	888
Liquor Milk or cream in coffee or tea	1 shot 1 Tablespoor	QQQ		999
Sugar in coffee or tea, or	2 teaspoon	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$	QQQQQQQQQ	QQQ
on cereal	٠			
DAIRY, BEVERAGES EATE			NUMBER OF TIMES PER	P DAV:
THAN SEVEN TIMES A DA	·Υ	S M L	8 9 10 11 12 13 14 15	16 17, 18 19
1			00000000	2000
3		QQQ		
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	1			



Page 6

The following questions are about your eating habits during the last six weeks.

) Seldom/Never (

Seldom/Never Sometimes

) Sometimes

7.	How often do you eat the skin on chicken? Seldom/Never Sometimes	Often/Always
200000	How often do you eat the fat on meat? Seldom/Never Sometimes	Often/Always

8. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

9. Not counting juices, about how many pieces of fruit do you eat per day or per week?

none 1 2 3 4 5 6 7 8 9 per DAY or V

none 1 2 3 4 5 6 7 8 9 per DAY or WEE

FRUITS O

How often do you add salt to your food?

How often do you add pepper to your food?(

Page 7

5699

Often/Always

Often/Always

10. Have you taken any vitamins or minerals in the last six weeks?
NO YES, fairly regularly YES, but not regularly If YES:
If YES, please indicate the type and number of pills per Day or Week.
Multiple Vitamin Pills Other Vitamin/Mineral Pills Vitamin A Vitamin C Vitamin E Calcium or dolomite Iron Folate (B6)
For the Other Vitamins, please indicate below how many milligrams or IUs per pill you take. Vitamin A
Other Supplements (please fill in all that apply) Yeast Selenium Zinc Beta-Carotene Cod Liver Oil Other: Other:
Please list the brand and type of multiple vitamin/mineral you usually take:
Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.
PLEASE DO NOT WRITE IN THIS BOX
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 Subject Number
other vitamins 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Page 8 — Oct

SURVEY NETWORK™

Corm Number 25020-5-72

/	Non-pregnant 3		
	Non-pregnant Soldiers	Date:	0
	Subject Number: This questionnaire is similar to the one you answered last time. It will ask y activity level and health habits. It will take about 20 - 30 minutes. If you has survey, please ask for help from the person who gave this survey to you. Pl fill in the ovals. Thank you.	you some questions ave any questions	about the
•	PHYSICAL ACTIVITY AND SPORTS		
1.	activities you did during the last THREE MONTHS. Fill in the oval under you did not do. Next, go back to the activities where you filled in the oval for the average number of days per week you did the activity and write in	er NO in front of a al under YES and	nny activity fill in the ovals
	NO YES Last Three Months Walking Jog/Run Strength training (free weights, nautilus, etc.) Stretching (flexibility) exercises Other exercise or sports (list up to 2):	4 5 6 7 8 8 8 8 8 8	PER DAY
	88888	3888)
2.	. Are you currently using birth control? NO YES If YES, what method or type are you using?		
3.	. Have you donated blood in the last six months? NO YES	subje	ct number
	If YES, how many months ago was it? $\begin{array}{c c} 1 & 2 & 3 & 4 & 5 & 6 \\ \hline \end{array}$	0 1 2 3	4 5 6 7 8 9 day
4	. What day and month did your last period start?/day/month	0 1 2 3	4 5 6 7 8 9 month
5	During the last six months, how many times did you start your menstrual period? Please fill in one oval for each month.	0 1 2 3	456789
	Month 1 Month 2 Month 3 Month 4 Month 5 Month 6	0 1 2 3	4 5 6 7 8 9 day 4 5 6 7 8 9 month

6. How many days were between the start of you last two periods? _

6670

_ days

Page 1

5 -m Number 75020-5-72

DIET HISTORY AND HEALTH HABITS

7. Are you on a special diet?	Please fill in no more than two ovals.
-------------------------------	--

No
Weight Loss
Weight Gain

Low Fat
Vegetarian
High Protein

High Carbohydrate
Low Cholesterol
Low Salt

8. The following section is about your usual eating habits. Thinking back over the past three months, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you are each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none"? Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
Cantaloupe (in season) Grapefruit Hamburger, Cheeseburger, Meat Loaf	1/4 medium (1/2) I/2 cup 1 medium		none 1 2 3 4 5 6 7	day week month
Winter Squash, Baked Squash	B	000	9000000	000

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you are apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you are something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you are the item.

ane 2

9617

Form Number 75020-5-72

	MEDIUM	YOUR	NUMBER OF TIMES:	PER:
	SERVING	SERVING	1101/12/22	
FRUITS, VEGETABLES		S M L	none 1 2 3 4 5 6 7	day week month
Apples, applesauce, pears	(1) or 1/2 cup	$\bigcirc\bigcirc\bigcirc$	0000000	
Cantaloupe (in season)	1/4 medium	BBB		$\bigcap \bigcap \bigcap$
Oranges	l medium	BBB		OOO
Orange juice or	60z glass	abla A A A	\overline{COCCC}	000
grapefruit juice)		
Grapefruit	(1/2)	$\bigcirc\bigcirc\bigcirc$	0000000	
Other fruit juices, fortified	60z glass	abla abl	0000000	
fruit drinks)		
Beans such as, baked beans,	3/4 cup	$\bigcirc\bigcirc\bigcirc$	0000000	
pintos, kidney, limas or in Chil	!			
Tomatoes, tomato juice	(1) or 60z	000	0000000	
Broccoli	1/2 cup	$\bigcirc\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
Spinach	1/2 cup	000	0000000	OOO
Mustard greens, turnip greens,	1/2 cup	$\bigcirc\bigcirc\bigcirc$	0000000	$\bigcirc\bigcirc\bigcirc$
collards				
Cole slaw, cabbage, sauerkraut		$\bigcirc\bigcirc\bigcirc$	$\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc$	QQQ
Carrots or mixed vegetables	1/2 cup	$\bigcirc\bigcirc\bigcirc$	$\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc$	$\bigcirc\bigcirc\bigcirc$
containing carrots				
Green salad	i med. bowl	QQQ	QQQQQQQQ	QQQ
Salad dressing, mayonnaise	2 Tablespoon	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcirc\bigcirc\bigcirc$
(including on sandwiches)**:	•			
French fries and fried potatoes		QQQ	QQQQQQQQ	$\mathcal{C}\mathcal{C}\mathcal{C}$
Sweet potatoes, yams	1/2 cup	QQQ	POSOSOS	$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$
Other potatoes, incl. boiled, baked, potato salad, mashed	(1) or 1/2 cup	$\bigcirc \bigcirc \bigcirc$	$\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}$	$\mathcal{O}\mathcal{O}\mathcal{O}$
- 11996067961561741975755555555555555555555555555555555	3/4 cup			
Rice	3/4 Cup	$\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}\mathcal{O}$	P0000000	000
FRUITS, VEGETABLES EA	TEN MORE		NUMBER OF TIMES PE	R DAY:
THAN SEVEN TIMES A DA		l c M r		16 17 18 19
I		S M L	$\overset{\circ}{\sim}$	$\mathring{\cap} \mathring{\cap} \mathring{\cap} \mathring{\cap}$
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4		\bowtie	R	XXXX
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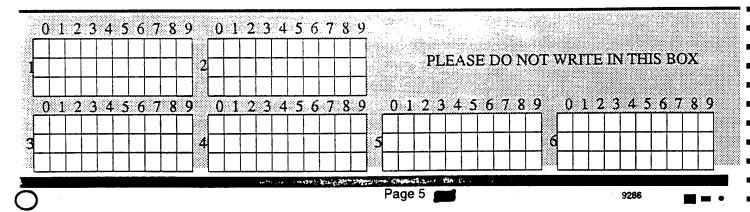
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				$\overline{}$
	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:
MEAT, LUNCH ITEMS		S M L	none 1 2 3 4 5 6 7	day week month
Hamburgers, cheeseburgers,	i medium	ŎÖŌ		000
meat loaf))		
Beef - steaks, roasts	4oz	\bigcirc	0000000	
Beef stew or pot pie with	1 cup	OOO		$\bigcirc\bigcirc\bigcirc$
carrots, other vegetables	,	(
Liver, including chicken	4oz	$\bigcirc\bigcirc\bigcirc$	00000000	$\bigcirc\bigcirc\bigcirc$
livers	4oz (2 chops)			
Pock, including chops, roasts Fried chicken	2sm/11g piece	\mathcal{C}	RRRRRRR	$\times \times \times$
Chicken or turkey, roasted,	2sm/11g piece	\bowtie	PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	\bowtie
stewed or broiled	31	$\cup \cup \cup$		
Fried fish or fish sandwich	4oz or 1 sand	$\bigcirc\bigcirc\bigcirc$		
Other fish, broiled, baked	4oz	\bowtie		
Spaghetti, lasagna, other	I cup	abla abl		
pasta with tomato sauce				
Hot dogs	2 dogs	QQQ	QQQQQQQQ	QQQ
Ham, lunch meats	2 stices	QQQ	QQQQQQQQQ	
Vegetable soup, vegetable beef, minestrone, tomato soup	1 med, bowl	$\bigcirc \bigcirc \bigcirc$	OOOOOOO	
MEAT, LUNCH ITEMS EA			NUMBER OF TIMES PEI	R DAY.
THAN SEVEN TIMES A DA	AY	S M L	8 9 10 11 12 13 14 15	16 17 18 19
1			\mathring{C}	0000
2		DDD	0000000	0000
BREAKFAST FOODS		S M L	none 1 2 3 4 5 6 7	day week month
High fiber, bran or granola	1 med. bowl			
cereals, shredded wheat		\sim		
Highly fortified cereals, such as Product 19, Total or Most		$\bigcirc\bigcirc\bigcirc$	0000000	000
Other cold cereals, such as	I med. bowl		h	
Com Flakes, Rice Krispies				
Cooked cereals	1 med. bowl	$\bigcirc\bigcirc$		QQQ
Eggs (1 egg = small serv)	.1	\wp		$\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}\mathcal{L}$
Bacon Sausage	2 slices 2 patties/link	\wp		HHH
	1	<u> </u>	NUMBER OF TIMES PE	P DAV:
BREAKFAST FOODS EAT THAN SEVEN TIMES A D.		S M L	8 9 10 11 12 13 14 15	16 17 18 19
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SURVEY METWORK™

Form Number 75020-5-72

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:	PER:			
BREADS, SALTY SNACKS SPREADS		S M L	none 1 2 3 4 5 6 7	day week month			
White bread (including sand-	!	ÖÖÖ					
wiches), bagels, etc., crackers Dark bread, including whole	crackers 2 slices	$\cap \cap \cap$					
wheat, rye, pumpernickel		\sim					
Corn bread, corn muffins,	1 med. piece	000	0000000				
corn tortillas Salty snacks (chips,	2 handfuls	$\bigcirc\bigcirc\bigcirc$	0000000	000			
popcorn, etc.)							
Peanuts, peanut butter	2 Tablespoon		0000000				
Magazine on bread or rolls	2 pats	$\bigcirc\bigcirc\bigcirc$		QQQ			
Butter on bread or rolls	2 pats	$\circ\circ$	0000000				
BREADS, ETC. EATEN MO			NUMBER OF TIMES PER DAY:				
THAN SEVEN TIMES A DA	AY ·	S M L	8 9 10 11 12 13 14 15	16 17 18 19			
1		000	0000000				
2				QQQQ			
3		QQQ	QQQQQQQQ	QQQQ			
4		$\mathcal{O}\mathcal{O}\mathcal{O}$	00000000	$\frac{0000}{0000}$			
SWEETS		S M L	none 1 2 3 4 5 6 7	day week month			
	1 scoop	$\bigcirc\bigcirc\bigcirc$	0000000	000			
Doughnuts, cookies, cakes,	Ipc or 3 cook	abla 000	0000000	000			
pastry Pies	I med, slice						
Chocolate candy	sm bar / loz	\bowtie	PYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY	$\times \times \times$			
		000	0000000	$\frac{1}{1}$			
SWEETS EATEN MORE			NUMBER OF TIMES PE	R DAY:			
THAN SEVEN TIMES A DA	ΑY	S M L	L 8 9 10 11 12 13 14 15 16 17 18				
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6		$\bigcirc\bigcirc\bigcirc$	D0000000	$\bigcirc\bigcirc\bigcirc\bigcirc\bigcirc$			
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1 2 1	3	14
स्वर्यक्रम् वर्षे विकास स्वर्थन । १८३ वर्षः स्वर्धे १९६ १ विकास १८४४	Page 6	

The following questions are about your eating habits during the past three months.

9.	9. How often do you eat the skir	on chicken?	Seldom/Never	Sometimes	Often/Always
	How often do you eat the fat o	n meat?	Seldom/Never	Sometimes	Often/Always
	How often do you add salt to y	our food?	Seldom/Never (Sometimes	Often/Always
	How often do you add pepper	to your food?(Seldom/Never (Sometimes	Often/Always
10	10. Not counting salad or potatoe	es, about how n	nany servings of veg	getables do you es	at per day or per week?
	VEGETABLES none	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\overset{4}{\bigcirc}\overset{5}{\bigcirc}\overset{6}{\bigcirc}\overset{7}{\bigcirc}$	8 9 per DA	Y or WEEK

11. Not counting juices, about how many pieces of fruit do you eat per day or per week?

none	1	2	3	4	5	6	7	8	9	per DAY o	r WEEK

FRUITS

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5699

Non-pregnant 3	C
12. Have you taken any vitamins or minerals in the past three months?	
NO YES, fairly regularly YES, but not regularly If YES:	
If YES, please indicate the type and number of pills per Day or Week.	
Multiple Vitamin Pills Other Vitamin/Mineral Pills One 1 2 3 4 5 6 7 8+ Day Week Vitamin A Vitamin E Ocalcium or dolomite Ocalcium or dolomite Iron Folate (B6) Ocalcium or dolomite Ocalcium or dolomite	
For the Other Vitamins, please indicate below how many milligrams or IUs per pill you take. Vitamin A	
Other Supplements (please fill in all that apply) Yeast Zinc Cod Liver Oil Selenium Beta-Carotene Other:	
Please list the brand and type of multiple vitamin/mineral you usually take:	_
Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.	l
PLEASE DO NOT WRITE IN THIS BOX 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 Subject Number	

other vitamins 0123456789

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